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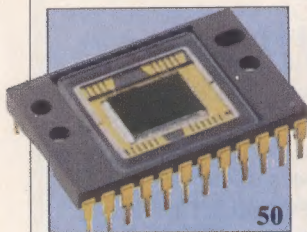
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VIDEO

magazine



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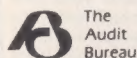
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The
Audit
Bureau

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May 1993

Number Five

Have you ever seen satellite TV? If not, you don't know what you're missing! Because satellite TV offers you the ultimate home entertainment feast: excellent audio reception...exceptional video reception...and superior programming choice. Interested?

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CHANNEL ONE

Going wide, at home

In the movie business, "going wide" indicates that a feature film will expand its distribution to hundreds, even thousands, of theaters, often following a limited run in a few major market showcases.

This spring, after a few false starts, the U.S. television set is "going wide" with the introduction of the first 16:9 widescreen sets. By mid-summer you'll be able to select a widescreen projection or direct-view set from one of several companies including Thomson (under its ProScan and RCA brands), Panasonic, JVC and Philips. We think you're going to like what you see.

We've been fortunate to have had the opportunity to preview a preproduction ProScan set by Thomson Consumer Electronics in our home theater center and discuss its merits with representatives of the company. Senior editor Brent Butterworth's report, "Why Widescreen?," appears on page 42 along with contributing editor Martin Levine's companion article outlining the plans of other manufacturers jumping early into the 16:9 fray and the features their sets are emphasizing.

Widescreen may not be for everybody, at least not at first, given its premium price. But you're going to begin seeing the sets in retail stores very soon, if you haven't already, and once you've spent any time watching widescreen programs, we think you'll feel, as we do, that it's tough to go back.

Others who have experienced the wonders of widescreen have been convinced. A consumer survey conducted by Thomson last year in Europe, where widescreen has been available for two years, showed that more than half of the viewers liked it better than conventional screens and that they would be willing to pay considerably more for the wider picture.

You'll find that the wider screen also enhances the viewing experience for programs other than movies. In the future, sporting events will be seen in an entirely new and pleasurable manner with broader views of playing fields and the interactions among players. Baseball, for instance, will look like a whole new ballgame in 16:9. And the many digital features manufacturers have built into these sets will give you a glimpse of how you'll interact with the next generation of TVs. Granted 16:9 won't realize its true potential until HDTV comes our way in a few years. But even if you're not in the market for a new set now, head down to a retail store that's demonstrating widescreen sets. You'll be looking at the future.

James M. Barry
Editor

FOR THE DISCRIMINATING MOVIE FAN.

Batman (1989)	*0642504
Batman Returns	*1029909
Wayne's World	*0853705
The Sound Of Music	*0003905
Backdraft	*0559005
Alien	0000208
Aliens	0360909
The Abyss	*0881102
Die Hard	*0367607
Die Hard 2	*0041806
Ghost	*0826008
E.T.: The Extra-Terrestrial	*0681106
The Silence Of The Lambs	0805309
The Godfather	0000802
The Godfather Part III	0842302
Back To The Future	*0211409
Back To The Future Part II	*0921304
Back To The Future Part III	*0497008
Predator	*0364901
Predator 2	*0104307
Robin Hood: Prince Of Thieves	*0976803
Home Alone	*0104208
Scarface (1983)	0216804
Goodfellas	*0969808
The Blues Brothers	0211706
Dune	0211102
Kindergarten Cop	0523407
Lethal Weapon	0630806
Lethal Weapon 2	*0642702
National Lampoon's Animal House	0211508
The Man Who Would Be King	*0085803
The Hunt For Red October	*0825000
The Bible	*0074708
Jaws	0100008
Edward Scissorhands	0104604
The African Queen	0051102
Beetlejuice	0633008
American Graffiti	0211300
Harry Connick, Jr.: Singin' & Swingin'	0968107
Boomerang	*1064005
Bugsy	*0853408



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Lethal Weapon 3*
1051507



Alien 3*
1042506



Dances with Wolves*
0805200



Return of the Jedi*
0354704



Star Wars*
0056408



The Empire Strikes Back*
0091009

Far & Away *1046507
Fried Green Tomatoes 1005404

Hook *0854307
Lawnmower Man 1014505

Hearts of Darkness: A Filmmaker's Apocalypse	1002500
My Cousin Vinny	1033109
Blue Velvet	*0515007
Star Trek: The Motion Picture	*0203505
Star Trek II: The Wrath Of Khan	*0201301
Star Trek III: The Search For Spock	*0201608
Star Trek IV: The Voyage Home	*0430603
Star Trek V: The Final Frontier	*0448605
Star Trek VI: The Undiscovered Country	*1001007
Superman: The Movie	*0001305
Superman II	0601500
Hard To Kill	0953505
Born On The Fourth Of July	*0489104
Field Of Dreams	0920306
Presumed Innocent	*0962100
Road Warrior	0602805
Chinatown	*0202507
Bird On A Wire	*0497305
Beverly Hills Cop	0205302
Henry V (1990)	*0040303
Henry & June	*0499301
The Grifters	0383000
Bugs Bunny Classics	0297705
Conan The Barbarian	*0220509
The Empire Of The Sun	*0633206
Dangerous Liaisons	*0638700
Reversal Of Fortune	0969709
Always	*0921502
Dirty Harry	0601708
Memphis Belle	*0983502
Big	0367409
New Jack City	0971507
Fatal Attraction	0439307
Chariots Of Fire	0601401
It's A Wonderful Life (45th Anniversary Ed.)	0392308
The Last Boy Scout	*0779108
North By Northwest	*0844209
Other People's Money	*0392704
2001: A Space Odyssey	*0844308
Patriot Games	*1051309
The Prince Of Tides	*0847103

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FEEDBACK

Simply the best

I wish to tell you that the tape tests by Lancelot Braithwaite in the March '93 issue ("VHS Tape Tests") are the best I can remember seeing. The graphs are superb and the numbers are beautifully displayed. For once the summary evaluations are understandable by all us ordinary people. For the first time I feel like I really understand the tapes and can purchase wisely. It is truly the best article about tapes I have ever seen.

Charlie Pitts
Sumter, South Carolina

Copy warning

Back in the '80s, when people first started to timeshift and tape programs off the air, television broadcasters had a cow. When DAT came out, record companies threatened to sue manufacturers because their recorders were allowing consumers to make perfect audio copies. If HDTV is to be digital, won't the television industry put up another fight because we will be receiving high-quality copies of the programs they own? I wouldn't be surprised if VCRs were next required to employ some form of serial copy protection.

Shawn A. Stambaugh
Anchorage, Alaska

CDTV MIA

In your December feature on games ("Big Game Hunt"), Martin Brochstein's discussion of CD-multimedia devices mysteriously does not identify Commodore's CDTV as a leading multimedia system, along with CD-I and VIS. Let me reiterate some of CDTV's strengths. It can be expanded to a full computer with an optional kit (keyboard, disk drive, wireless mouse and system software), letting the consumer take advantage of more than 3,500 commercial products and thousands of software titles. There are ports for disk drives, printers, MIDI, genlocks and modems. CDTV is ideal for families that would like to have a computer and an entertainment device for their children.

David E. Ferro
Auburn, New York



Not naughty but nice

Yes! Yes! Yes! Finally there will be movies that I will enjoy watching without cringing. Contrary to what George Feltenstein of MGM/UA may think ("Sanitized for your protection," Jan. '93), there must be a market to serve those of us who do not relish filthy language, nudity and graphic violence. As for waiting for them to appear on prime-time TV, no thanks. I like to watch my movies when they are newly released on video and without commercial interruptions. Cheers to PrimeCut Entertainment!

Mary Brytowski
Worcester, Massachusetts

Flipping out

How did we get saddled with flip-top 8mm videocassette cases when VHS and Beta have convenient slipcovers? Recently I acquired some Fuji Extraslim tape that does come with slipcovers. I tried to order the slipcovers, but neither Fuji America nor anyone else seems to sell such a thing, and everybody is quite rude about it. Am I the only person fed up with these boxes?

John C. Emery
Melbourne, Florida

A dedicated fan

I applaud your continuing, increasing coverage of laserdisc hardware and software. As a dedicated laser fan, I hope you will increase your coverage even more.

Jay Friedman
Centerville, Ohio

Video Magazine welcomes your comments. Address correspondence to Feedback, Video Magazine, 460 West 34 Street, New York, NY 10001.

VIDEO

magazine

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GAZETTE

Picture this

With still photos that capture the gritty look and feel of '40s tabloid newspapers, photographer Ben Glass supplied the visual panache needed for MCA/Universal's *The Public Eye* (available April 14). Glass, who usually shoots still pictures on modern movie sets, was asked to provide shots that would be attributed to the film's lead character, a press photographer played by Joe Pesci and loosely based on the life of real-life tabloid photographer Weegee.

"It took years to become a true press photographer in that era," Glass says. He marvels at the depth of feeling the original photos contain: "People looking at their tenements, watching their



Mean Streets:
Ben Glass's
'40s-style
tabloid
photos.

Plotting the future

At the age of 10, Bob Bejan wrote short stories about black boxes controlled by computers. This was when computers were extremely large and actually having one on your desk was unthinkable. These days, you can pretty much direct a movie on your own TV using computer technology—and Bob Bejan is busy clicking his mouse, trying out some editing software on his new, souped-up Macintosh. He hopes to use it on his next Interfilm.

The first Interfilm, *I'm Your Man*, opened last winter in theaters on the East and West coasts. Called a "cinematic game" by its creators, *I'm Your Man* plays like a cross between a particularly bitter election, a detective spoof and *The Rocky Horror Picture Show*. At various points in the story, the audience gets to decide what direction the plot takes. In the 20-minute program, these opportunities come up every minute or two. The audiences shout and lobby for their choices, registering them on a three-buttoned pistol grip on the arm of

grain. Then I worked with the lab to get the exact development temperature and printed on the type of fiber-based paper they used in the '40s."

Glass worried that his staged shots might not have the immediacy of authentic newspaper photos, but a little research calmed his fears. The original tabloid photographers actually convinced bystanders to stick around until they got the shots they wanted, even asking cops at a crime scene to stand a certain way for just the right composition. "These guys staged things all the time," Glass says. "People don't realize how sophisticated the techniques were back then."

—Jon Silberg

whole lives go up in flames, or innocent bystanders captured moments after a mob hit." Glass met with veteran press photographers as part of his quest to reproduce the essence of these classic pictures. But modern cameras and equipment simply wouldn't do.

"I had to get hold of a Crown Graphics camera, the '50s version of the '40s Speed Graphic camera, and make some adaptations," Glass explains. "I used a very fine-grain film stock and pushed it for maximum contrast without

each seat. At one showing, a viewer ran up and down an empty row, pressing his choice on every pistol grip.

"If there are less than 30 people in the theater," Bejan laughs, "Interfilm is an athletic event. But the human dynamic of Interfilm is what's inspiring about it to me."

"I think we're here to add a new dimension to entertainment," adds Bill



Control Freak: Interfilm audience members use these pistol grips to vote on the direction of the plot.

Franzblau, Bejan's partner in Interfilm's parent company, Controlled Entropy Entertainment. "We will help keep theatrical exhibitors alive in the 21st century. It seems that everyone else [in interactive entertainment] is concentrating on the home market."

While the idea behind Interfilm might be revolutionary, the technology is advanced but clearly recognizable. The film was mastered onto a standard laserdisc, and is shown using an LD player, two Sony 1251 data projectors and a custom Faroudja line doubler.

But it's not just the film's lack of sprockets and the specter of advanced home video technology in theaters that have led to certain critics hurling barbs at the idea of a non-linear film. Bejan shrugs this off, pointing out that if Interfilm gets the chance, it could become an art form, with its own critical criteria.

"This," Franzblau notes, "is our *Steamboat Willie*—not our *Citizen Kane*."

"The first movie was just a naked woman bouncing up and down," Bejan adds. "You paid a penny to peep into it. Hopefully we'll keep getting better. That will determine if we deserve to live or not, I guess." —Hank Bordowitz

That old Tap magic

Some things always come back. Like locusts, the beer-crazed teens who converge on Fort Lauderdale each spring and that nasty soap scum in your bathtub, Spinal Tap has returned—a decade after Rob Reiner's bio-pic *This Is Spinal Tap*—with a new video commemorating the metal band's final sellout show from its 1992 tour.

For frontman David St. Hubbins (a dead ringer for comedic actor Michael McKean), this outing to support the album *Break Like the Wind* was remarkable, a big change from "the crushing ennui we've been used to greeting us," he told us. "They were in need of medication—they were that enthusiastic."

Now that his life in Pomona has settled back into routine—coaching soccer for the Parks Department—St. Hubbins and his wife Jeanine find time for video at home. Using a switcher for his two VHS VCRs, they share their favorite genres. "We go back and forth. First it's romantic, then it's Oriental people killing each other, then it's romantic again," he says.

But will *The Return of Spinal Tap* (MPI) knock Cindy Crawford's very hot workout tape off the special-interest charts? St. Hubbins says, "I hope not. She's never knocked anything of ours off, although we've begged her to."

—April P. Bernard



Headbangers' Ball: Your favorite fictional rock band is back on home video.

TIMESHIFT

TEN YEARS AGO IN VIDEO MAGAZINE

"Video product improvements march on. Over the past year we've seen a trend toward component video, the stabilization of videodisc technology, heightened interest in pocket TVs, continuing infiltration of videogame systems



May 1983

and home computers into our lives, lessening interest in projection TVs, and the addition of stereo to VCR technology...Probably the most **violent action** intended to halt the sale of X-rated video has been taken in Canada by a group known as the Wimmin's Firebrigade. In the dead of night, the Firebrigade firebombed Vancouver's Red Hot Video, one of a chain of stores specializing in skinvid. No one was hurt, but the store was demolished and Red Hot offered a \$100,000 reward for information leading to the group's whereabouts...**Good news for program producers:** A winning combination of picture, price and promotion has generated enough hungry videophiles to crack the 100,000 barrier during the first few weeks of availability for a blockbuster like *Star Trek II*. Even better news for us: This is translating into lower prices." ■



MAY 1993

9

VIDEO ADVERTISER

Q&A

Joe Facchini, Marketing Manager, Camera and Switcher Products, Panasonic Broadcast & Television Systems Co.

Q When is it time to buy a high-end editor — what level of capability should a videographer have reached?

A When one starts making more sophisticated tapes with multiple camera shoots. For simple video that will be viewed by a guy and his family only, two VCRs should suffice, but when you get into rapid cuts and more professional-type work, you'll need some type of editor.

Q What features and capabilities should you look for in a high-end editor?

A A reasonable amount of accuracy. Also some type of edit list management capability.

Q Is it better for an amateur editor to buy an all-in-one unit or to buy a series of separate units?

A All-in-one, definitely.

Q What audio features are necessary? How many inputs and outputs are needed?

A The ability to do split audio — the capability to add or subtract audio without affecting the video. Also, some type of level control. As far as ins and outs go, I'd say two or three should suffice.

Q What separates different high-end units from one another?

A Some have some sort of list management type of system. Whether an editor is microprocessor controlled or computer-based is a big distinguishing feature. Computer-based editors run higher than the average amateur's budget — around \$1500 — but they can be very sophisticated.

GAZETTE

Video Flashes

IF SONY HAS its way, wide-screen TV owners should have a lot more programming to watch within a couple of years. Much of the company's latest professional gear can record 16:9 wide-screen video. Sony plans to promote this format — which it calls 525 Widescreen — for video production until HDTV equipment becomes affordable, which should take at least a decade.

Probably the first place consumers can catch 525 Widescreen is on the upcoming DirecTV direct-broadcast satellite service, which will rely heavily on the new Sony equipment. Sony says 525 Widescreen looks much better than broadcast NTSC because all of the equipment — the cameras, VCRs, DBS uplinks, receivers and widescreen TVs — processes the video signal in component (RGB) form, rather than the composite signal usually used for NTSC. A demonstration of 525 Widescreen using Sony's new Digital Betacam VCR and professional 16:9 monitor was convincing — from distances of about eight feet or more, it looked as good as HDTV.

RUMORS ARE FLYING FAST AND furious that Walt Disney Home Video is gearing up to raid the vaults and release the last of its classic animated features, *Snow White and the Seven Dwarfs*. A restoration and theatrical re-release are in the works, and a subsequent video release would follow a pattern the company established in recent years with *Fantasia* and *Pinocchio*. Meanwhile, if you've been putting off buying those current Disney titles the kids have been clamoring for, your time will soon run out. A number of popular videos have just gone on official "moratorium": *101 Dalmatians*, *Beauty and the Beast*, *The Great Mouse Detective*, *The Rescuers* and *The Rescuers Down Under*. Stores will continue to sell remaining stock as long as it lasts, but are now unable to order additional copies of these titles.

MANY HAVE PREDICTED THE advent of movies recorded on CD, but two companies have finally demonstrated full-motion video systems for five-inch discs that provide high-quality images. JVC recently showed CDs with video recorded using an extended version of the MPEG-1 compression system. It plans to develop a video CD

player using the MPEG-2 standard when the standard is approved late this year. The new player will provide 74 minutes of video, but thanks to faster rotation speeds and narrower tracks, will provide a data rate four times higher. This type of system could produce a laserdisc-quality picture.

Meanwhile, Nimbus, a British record company, demonstrated a new technology that squeezes a full-length film onto a single CD that can be played on conventional CD players. The company showed clips of Bon Jovi's *Young Guns II* music video, as well as the theatrical trailer for *Howards End*. The new format doubles the density of information on a CD by reducing the size of the pits and the space between tracks, both to a degree that many current CD players could compensate for automatically, without adjustment. The CD player feeds an MPEG-based full-motion video adapter through the player's digital output.

IF YOUR VIDEO SYSTEM'S ailing, who you gonna call? Try the *Cable Doctor*, a new call-in TV show that deals with cable, video, audio and satellite problems. The show started on Manhattan Cable in New York City and has been picked up by the American Entertainment Network, which can be seen on many cable systems and on the Galaxy 6 transponder Monday nights at midnight. Host Ken Sander answers your technical questions and interviews visiting video experts (including the occasional *Video Magazine* editor).

CAMCORDER FEATURES ONCE considered exotic continue to spread. Canon is adding a mini-version of the VariAngle stabilizing prism to a new UC-series camcorder due later this year. This will be its first camcorder with image stabilization. So far, Canon has only used the prism in its 10x lens for the L1 camcorder. The UC camcorder will also have a 280,000-pixel color viewfinder, which looks significantly sharper than Canon's present version. Sony, meanwhile, is trying out a color viewfinder for the first time, on its new CCD-TR300.

Canon has made strides in autofocus systems, as well. It recently demonstrated a film-camera AF system that uses a CCD built into the viewfinder to track the user's eye movement. The camera automatically focuses on the same object you focus on. A Canon spokesman said the system could eventually migrate to camcorders.

Family values

What could be better than an evening spent watching a hit movie rented from the local video store? A chicken sandwich perhaps, but not much else, according to a survey measuring the relative value of good values.

Consumers firmly placed video rentals in the runner-up position behind America's top value, poultry, and just ahead of fruits and vegetables in the annual Conference Board poll of "best buys." TV sets ran a close fourth.

On the minus side, consumers think pay-per-view television is America's worst value, replacing last year's big loser, hospital charges. Cable TV, another video service people love to hate, ranked seventh from the bottom, separated from pay-per-view only by the likes of health insurance, credit card fees and lawyer's bills.

—Stan Pinkwas

A king and his court

"I am the king," declares Paul Goldenberg, the self-proclaimed "king of big-screen TVs," commanding his subjects to come to his storefront castle near the freeway in the tiny hamlet of La Habra, California. On TV and radio from Santa Barbara to San Diego, Goldenberg proclaims his store's specialty—Paul's TV is chock full of giant-screen sets, and *only* giant-screen sets.

The king's realm includes a 1,000-set warehouse that he says stocks every big-screen size made, and a 25-truck delivery fleet to support his promise of same-day delivery. "The people want to spend their money" on big TVs with good reception, Goldenberg says. "We just give them a friendly place to do that." With big-screen sales increasing to nearly a million sets last year, Goldenberg has tapped into a widening niche.

Californians hear the king's decrees most often from Christmas to Super Bowl Sunday, still the prime big-screen buying season. This year on the Saturday before the Super Bowl, 140 football fans ordered sets and King Paul delivered them all before the kickoff.

—James Caruso and Mavis Arthur

It's a sign of the laserdisc market's health that there are now two full-length books intended to help consumers make informed purchases. Douglas Pratt's **Laser Video-disc Companion** (New York Zoetrope, \$24.95), now in its second edition, was recently joined by Jeff Rovin's **Laserdisc Film Guide** (St. Martin's Press, \$15.95), an admirable effort in the same vein. While Pratt's book seeks comprehensiveness (bolstered by a decade's worth of reviews from Pratt's monthly *Laserdisc Newsletter*), Rovin's dwells on only 300 titles, but covers them in detail, with each entry divided into separate critiques of the movies and of the discs.

Alas, this approach is both the virtue and the primary flaw of his book. Rovin makes careful distinctions between great movies and great disc editions of them, but in the process is too limited in his scope, at least for the hardcore laserphile. His command of background information on the films is formidable—including fascinating bits of relevant trivia—and his insights into the movies are thoughtful and well-written, as are most of his criticisms of the discs. The book is entertaining, but its scope is too limited to be of more than occasional use to anyone other than the beginning laser-buyer.

Notwithstanding the existence of annotated laserdiscs—complete with analog-track narration—books about movies and television shows can still deliver the goods to devoted fans. Aljean Harmetz's **Round Up the Usual Suspects** (Hyperion, \$24.95) is the last word on *Casablanca* and one of the finest books ever written on the evolution of an individual film, right up there with Harmetz's earlier *Making of the Wizard of Oz* and Ron Haver's *The Magic Factory* (about *An American in Paris*). Not only does Harmetz write engagingly on the details of the movie's production history, but takes time to go into the movie's posthistory and the mythos that came to surround *Casablanca*. Harlan Lebo's **Casablanca: Behind the Scenes** (Fireside, \$15) is a somewhat more flaccid work, despite a foreword by screenplay co-author Julius Epstein.

The writing is more superficial and the detail less manifest, making this book much more suited to light reading.

Television continues to provide a source of



As Time Goes By:
Two new books explore
Casablanca's enduring
mystique.



inspiration for numerous screenwriters and publishers, with results of varying quality. From new publisher Windsong Press (Box 2978, Staunton, VA 24401) comes Joel Eisner and Barry Magen's **Lost in Space Forever** (\$18.95), a beautifully detailed look back on the production history, plots, casting and making of '60s TV series *Lost in Space*. Eisner and Magen, whose previous work includes *The Batman Bat Book*, spoke to virtually everybody involved in the show (June Lockhart wrote the foreword). Included are script changes, disputes with the network, and stories about the series' cast, crew and eccentric producer Irwin Allen. In the process, the authors show how the program evolved from a well-intentioned but not-too-popular sci-fi series into a wild and woolly piece of '60s pop culture.

Herbie J. Pilato's **Bewitched Book** (Fireside, \$14) is a charmingly loopy look at the Elizabeth Montgomery series—Pilato has a lot of fun telling the story of the show's production and the people behind it. Understandably, he doesn't take the task too seriously, and brings the personalities behind the show to life in the process.

—Bruce Eder

VIDEOTESTS



Recording Revolution: Sharp's ViewCam uses a large LCD screen as its viewfinder, so shots can be framed without holding the camcorder to your eye. Tapes fit into a hatch behind the screen (below).



VIDEOTEST
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SHARP Hi8 camcorder

Once again, Sharp has created a remarkably unique, useful camcorder—the VL-HL100U ViewCam, a Hi8 camcorder that uses a four-inch LCD monitor as its viewfinder.

This configuration opens up all sorts of possibilities for improving your videos and having more fun in the process. The most obvious advantage of the ViewCam is that you don't have to keep your eye glued to a little viewfinder tube while shooting. Because you can hold it unobtrusively at your waist like a Brownie camera, subjects should be less intimidated than they would be with normal camcorders. Simply put, this makes shooting video a lot more fun. And you don't even have to plug it into your TV

Sharp VL-HL100U Hi8 Camcorder

Price: \$2,199

Weight & Size (h/w/d): 1.9 lbs. without battery or cassette; 5-7/8 x 7-7/8 x 3-1/8 inches



Image Sensor: 1/3-inch CCD, 410,000 gross pixels

Lens: 1/2, 8x (5.8-46.4mm) power zoom

Filter Diameter: 37mm

Minimum Focusing Distance: less than 1 inch at wide-angle

Autofocus: TTL full-range with auto macro

Minimum Illumination: 13.2 lux

Iris: auto only

Shutter Speeds (sec.): 1/60 (normal), 1/100, 1/250, 1/1,000, 1/4,000, 1/10,000

White Balance: auto with lock

Viewfinder: 4-inch low-glare LCD with on-screen indicators in camera mode for stabi-

HIGHLIGHTS

Sharp's VL-HL100U ViewCam is easily one of the most unusual

camcorders ever created—it's a combination of a TVCR and a camcorder. Its four-inch LCD viewfinder lets you frame shots while holding the camcorder away from you, and it lets you use the ViewCam to play 8mm videos as well. It has a digital image stabilizer, digital effects, stereo sound and an 8x zoom. The picture is average to good, audio is poor, and ease of use is very good, for average to good overall performance. At \$2,199, it may seem expensive, but you have to remember that the price includes a high-quality LCD monitor.

lization, low light, Hi8, record mode, date/time, picture adjustment, volume, tape warnings, clogged heads, fade, A/V in, edit, large character warning displays, index search, low battery, dew, tape counter, errors, full auto, transport mode, manual operations

Microphone: stereo electret condenser

Jacks: external mic, headphones, S-video/video/stereo audio in/out, DC out for RFU

Tape Speed: SP

Video Heads: 4

Cue & Review Search: forward—8x, reverse—6x

Fast Forward/Rewind Time: 8-1/4 min. for 120-min. tape

Remote Pause: only

to watch your videos.

You can also use the ViewCam as a TVCR. The screen is large enough for comfortable viewing from a few feet away, and there's an integral speaker and a headphone jack. When on vacation, you can use it as a camcorder by day and to watch recorded programs by night. Or you can take it on airplane trips, provided the airline allows it. (There are no federal regulations covering use of a VCR and an LCD monitor, only against the use of tuners.)

However, there's no tuner, as there is for the Japanese version of the ViewCam. Including one for the U.S. model might have made the VL-HL100U subject to the U.S. dumping penalty recently assessed on LCD TVs. To make 8mm tapes for travel, you can use the VL-HL100U as a recorder. Just connect it to the video/audio output of a VCR, then make copies of tapes, or use the VCR's tuner and record shows off the air.

The screen is a newly developed anti-glare LCD which can be viewed even in bright sunlight. An innovative rotating system lets the screen turn vertically through 270 degrees for high- and low-angle shooting. It even lets you flip

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through IR

Remote Control: IR wireless with buttons for record run/stop, tele, wide-angle, play, pause/still, rewind/search, fast forward/search, stop, volume down and up

Program Start Locator/Index/Cue: auto index mark, search for up to 10 marks

Audio: hi-fi AFM stereo

Special Features: still-frame, insert edit, flying erase head, snapshot, still, strobe, digital image stabilizer, self-recording

Absent Features: frame advance, slow motion, speed play, LANC remote control, BLC or manual iris, accessory shoe, titler

RESULTS

Horizontal Resolution: Hi8—370 lines, 8mm—240 lines

S/N Ratios (dB): unweighted luminance—39.4, weighted luminance—49.7, unweighted video—39.9, weighted video—48, chroma AM—41.7, chroma PM—37.5

Audio Frequency Response: 180 Hz–12.5 kHz, +1.6/-3 dB; -22.5 dB at 20 Hz; -6.2 dB at 20 kHz

Hi-Fi Dynamic Range: 76.2 dB

Audio Distortion: 0.4%

RATINGS

Picture: average/good

Audio: poor

Ease of Use: very good

Overall: average/good

VIDEOTEST
682

PIONEER combi player

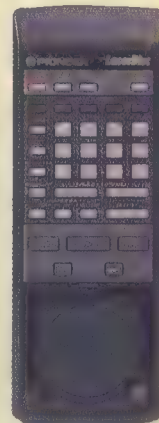
CD changers have really caught on—they now outsell single-disc players. Last year, Pioneer recognized this trend and created the first combination laserdisc player/five-CD changer, the CLD-M90. This year, the company expands its line of these machines to three models, of which the CLD-M401 is the most expensive.

The CLD-M401's disc tray has the usual places for loading laserdiscs and CDs in the center, and five positions circling the center for CDs. You can play a single CD either from the center position (which loads a little faster), or from one of the five changer positions. You can even leave the CDs loaded in the changer while a laserdisc plays. The front panel and the remote have five buttons each for direct selection of a CD.

New features include an automatic digital level controller (ADLC), which maintains a relatively consistent output level from disc to disc regardless of the varying levels at which the discs were mastered. This is a nice feature—the zero-decibel (maximum output) reference levels of laserdiscs can vary by several decibels. There's also a simple surround processor that widens the acoustic image and creates a theaterlike atmosphere. It's no replacement for Dolby Pro-Logic, but those who still use two-channel audio systems will probably

HIGHLIGHTS

The CLD-M401 represents Pioneer's second generation of machines that combine a laserdisc player with a five-CD changer. It includes a surround-sound mode that creates a wider soundstage. For a \$760 combi player, its performance is outstanding, bettering most of this year's top-of-the-line players. The picture is excellent, and audio, ease of use and overall performance are very good to excellent. It lacks side-changing and CLV effects, but if you're looking for a basic combi player, the CLD-M401 is a good place to start.



enjoy the effect.

Other than those features and the CD changer, the CLD-M401 is much like any other budget combi player. It can be programmed to play CD tracks or laserdisc tracks in any order. You can even mix tracks from different CDs in the changer. You can search through CLV discs by chapter or time, and CAV discs by chapter, time or frame. The player produces clean search, still, slow-motion and speed-play effects on CAV discs. On the much more common CLV discs, the only effect available is clear scan—forward and reverse search that alternates still frames and black frames instead of the rolling, jerky CLV search produced by older players.

Videophiles might prefer to spend a little more money for a player with automatic side-changing and digital effects, which let you get clean effects from CLV discs. The CLD-M401 also lacks a jog/shuttle dial, picture processing options



Time for a Change: Pioneer's CLD-M401 operates as both a laserdisc player and a five-CD changer.

and A/B repeat, which lets you repeat any segment of a laserdisc.

It has two stereo audio outputs, a video output and a video/mono audio/DC output for an optional RF converter, which you'll need if your TV has no video input. Not having an RF converter built into the player eliminates a source of picture interference.

There's also an S-video output, which is driven by a high-performance comb filter. If you have a TV with an S-video input, connecting the CLD-M401 with an S-video cable might result in a better picture—the only way to know for sure is to try it.

Two nearby jacks allow a user to connect the CLD-M401 with other Pioneer components in a command chain. This arrangement relays commands from an infrared remote to all devices in the chain, so only one device (or an external infrared receiver) must be exposed. These jacks make it easy to use the CLD-M401 in a multiroom installation with other Pioneer components. There's also a CD synchro jack, which lets the CLD-M401 perform automated dubbing in conjunction with a Pioneer audio cassette deck. A Toslink optical digital output lets you connect a high-

Pioneer CLD-M401 Combi Player

Price: \$760

Weight & Size (h/w/d):
21.3 lbs.; 5-5/8 x
16-5/8 x 17-1/2 inches

Disc Formats: 12- and
8-inch laserdisc, 5-inch
CD-Video, 5- and
3-inch CD

Remote Pause: SR re-
mote in and out, CD
synchro out

Outputs: S-video, vid-
eo, stereo audio (2),
video/mono audio/DC
for RF adapter, Toslink
optical digital audio

Remote Control: IR
wireless with jog/shuttle
dial and buttons for
power, stop/eject, digi-
tal/analog/CX, audio
L/R/stereo, disc 1 to 5,
program, edit, chapter/
time, display, 10-digit
keypad, +10, clear, re-
peat, random play,
pause, scan reverse,
play, scan forward, skip
reverse, skip forward,
jog mode, plus rockers
for still/step forward or
reverse, multispeed for-
ward and reverse, and
multispeed - and +

**Program Start
Locator/Index/Cue:**
frame, time, chapter/
track, program

Analog Audio: hi-fi
AFM stereo/dual mono

Digital Audio: high-
speed, pulse-flow 1-bit
stereo/dual mono D/A
converters

Titles/Graphics: multi-
ple displays for frame,
time, time remaining,
total time, chapter/track
and programming

Special Features: five-
CD changer, front sur-
round mode, automatic
digital level controller,
shuttle dials, clear scan

Absent Features: RF
input and output, digital
effects, automatic side-
changing, picture proc-
essing modes

RESULTS

Horizontal Resolution:
425 lines

S/N Ratios (dB): un-
weighted luminance—
49.3, weighted lumi-
nance—57.8,
unweighted video—
51.3, weighted video—
58.2, chroma AM—
48.7, chroma PM—43.6

**Audio Frequency
Response:** digital rat-
ed—4 Hz-20 kHz;
digital measured—10
Hz-20 kHz, +0.1/-0.3
dB; analog measured—
20 Hz-20 kHz, +2.7/-2.5
dB

Dynamic Range:
98 dB

Audio S/N: digital rat-
ed—112 dB; digital
measured—more than
103 dB (our measure-
ment limit); analog
measured—67.9 dB

Audio Distortion: digi-
tal rated—0.0025%,
measured—0.003%

RATINGS

Picture: excellent

Audio:
very good/excellent

Ease of Use:
very good/excellent

Overall:
very good/excellent

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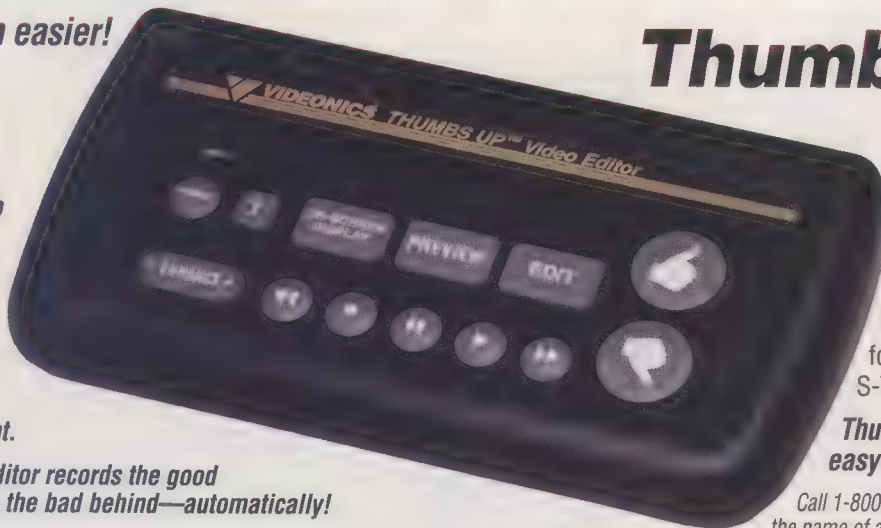


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video you don't want.*

*The Thumbs Up™ editor records the good
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quality outboard digital-to-analog converter, which we often do when playing CDs on a combi player.

Despite the addition of the CD changer, the CLD-M401 is really no more difficult to use than other Pioneer combi players. Most of the operating controls are on the remote, but a few controls exist only on the front panel—for example, hilite/intro scan, which plays the first 10 seconds of each track or chapter. There are shuttle dials for easy searching—a nice touch. Ease of use is very good to excellent.

Given its low cost and the complexity of its changer mechanism, we didn't expect much from the CLD-M401 in terms of performance. But were we wrong! Amazingly, it outperforms most top-of-the-line players we've recently tested. In most areas of performance, it is beaten only by Pioneer's \$3,500 LD-S2—and slightly at that.

We couldn't believe the numbers were so good, so we used a 25-inch Sony professional monitor to compare the CLD-M401 subjectively with Panasonic's \$1,100 LX-900, one of our recent favorites. Both pictures looked great, but the Pioneer displayed noticeably less chroma AM noise, especially in pictures of blue sky, where the LX-900's picture showed a bit of dark streaking.

Audio performance measures very good to excellent. We also evaluated the sound subjectively, comparing the CLD-M401 with the LX-900 and the Sony MDP-405 we tested last month. We very slightly preferred the CLD-M401 to the LX-900. Both use bitstream D/A converters, and both have a rather laid-back and very pleasing sound. We preferred the bright, open, detailed sound of the MDP-405 to both the CLD-M401 and the LX-900. But none matches the sound of a good CD player like Rotel's RCD-985 BX.

With high performance, the convenience of a five-CD changer and a low cost of \$760, the CLD-M401 is a steal. ■

Hi8 VIEWCAM

continued from page 13

it, letting the screen point in the same direction as the camera, so you can shoot yourself, or over your shoulder. When the screen is flipped all the way over, the image flips, too! You can shoot backwards without having to watch an upside-down image.

A user can choose from two brightness levels for the fluorescent tube that backlights the LCD, and can adjust screen color, brightness and tint. The camcorder has stereo sound, an 8x power zoom, fade to white and digital image

stabilization. It also offers three digital effects: still, strobe and snap, which records five-second stills.

The camcorder has two sections joined by a swivel. On the right is a handle topped with a cylinder for the camera; the left piece incorporates the LCD screen and the recorder.

The controls on the handle work just the opposite of those on most camcorders—you operate the run/pause but-

ton on front with your index finger, and the zoom at the rear with your thumb. This may seem unnatural, but we experienced no learning curve at all—we were immediately comfortable with the ViewCam. With your thumb, you can also access the effects and the stabilizer. The handle houses the battery.

The recorder section has a small leg that folds out and lets you prop up the

continued on page 31

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• 50mm oversized drivers.
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DM-90 Digital Monitor
• Full-sized headphone with 40mm drivers.
• Frequency response 4-26,000Hz
\$99.95



DM-70 Digital Monitor
• Same size as DM-90.
• Slightly lower power handling and sensitivity.
• Frequency response 4-26,000Hz
\$79.95



DM-40
• Budget version with 38mm drivers.
• Frequency response 15-22,000Hz
\$69.95

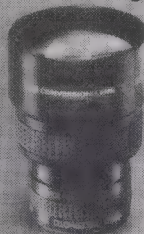


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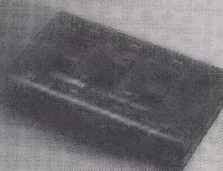
D205, 2 lenses in 1. One side is a 2.0X tele which doubles your ability to get close to your subject. Flip it over and it is a 0.5X wide angle lens. 46mm thread with 37mm ring.



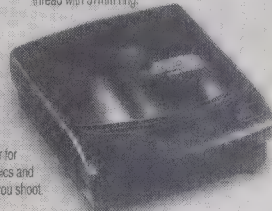
T202NC-2 0X telephoto lens. 46mm thread.



W52NC-0.5X wide angle lens. 49mm thread with 46mm ring.



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VIDEOTESTS



Worthy Successor: Panasonic's AG-1970 S-VHS editing deck is an updated version of the classic AG-1960, a favorite of semipro videographers.

VIDEOTEST
683

PANASONIC S-VHS VCR

most consumers. But for those who straddle the line between pro and ama-

teur—in Japan, Panasonic sells the AG-1970P as a consumer VCR. But in the U.S., Panasonic's professional division markets the deck. As a result, the AG-1970 is a hybrid—it's not enough deck for pros, and it's probably too much for

teur—part-time event videographers and serious hobbyists—it's a perfect fit.

The deck differs from other consumer S-VHS editing VCRs in that it has no menu system or onscreen programming—it relies entirely on front-panel buttons and a simple remote. Unlike those on consumer decks, its shuttle dial is not spring-loaded. This lets you leave the deck at any search speed—slow motion, play, speed play, fast forward, rewind or pause—without holding the shuttle ring. And of course, you can use the jog dial to advance frame by frame.

Its back panel also boasts professional features—a detachable three-wire

grounded AC cord and BNC video connectors. But the AG-1970's appearance is more suited for the living room than an editing suite, and unlike professional decks, it has a tuner and a timer.

Like its predecessor, the AG-1960,

HIGHLIGHTS

Panasonic's AG-1970P succeeds the company's AG-1960, one of

the workhorse VCRs of semiprofessional video. It combines consumer features like a tuner and a timer with pro features like BNC video connectors, a shuttle dial that is not spring-loaded, an edit control jack and sound on speed play, fast forward and rewind. Picture and hi-fi audio are excellent, linear audio is very good, and ease of use is excellent to very good, for an overall excellent rating. If you're looking for an S-VHS editing deck, be sure to see this one. It's expensive—\$1,650—but for the serious videographer, worth it.

Panasonic AG-1970 S-VHS VCR



Price: \$1,650

Weight & Size (h/w/d):
17-1/4 lbs.; 4-3/8 x 17
x 15-7/8 inches

Tape Speeds: SP, LP
(play only), EP

Video Heads: 4

Cue & Review Search:
7x SP, 12x EP

Fast Forward/Rewind
Time: 2 min. for T-120

Remote Pause:
Panasonic 5-pin (Control M) on rear, synchro
edit on front

Remote Control: IR
wireless with exposed
buttons for power,
pause/still, stop, still
advance, rewind/search,
play and fast forward/
search; covered buttons
for record, slow, slow

speed - and +, SP/EP,
VCR/TV, channel up,
channel down, input se-
lect, memory play,
audio out, monitor,
clock/counter, tape re-
maining and reset

Audio: linear mono,
hi-fi AFM stereo

Jacks: front—S-video/
video/stereo audio in-
put, synchro edit,
microphone, head-
phones; rear—RF input
and output, S-video/vi-
deo (BNC)/stereo audio
input and output, syn-
chro edit

Cable Tuning Range:
2 to 13, A-5 to A-1, A
to W, AA to FFF, 66 to
94, 5A

Timer: 8-event/1-month

Special Features: jog/
shuttle dial without

spring-loading, time-
base corrector, SAP II
decoding, switchable
sound on search, flying
erase head, still-frame,
frame advance, slow
motion, speed play, au-
dio dub, insert edit,
noise filter, auto head
cleaner

Absent Features:
onscreen programming,
indexing, titler

RESULTS

Horizontal Resolution:
S-VHS—400 lines;
VHS—240 lines

S/N Ratios (dB):
unweighted lumi-
nance—46.4 SP, 41.2
EP; weighted lumi-
nance—52.1 SP, 48.9
EP; unweighted video—
48.2 SP, 42.6 EP;

weighted video—51.8
SP, 49.6 EP; chroma
AM—47.9 SP, 42.1 EP;
chroma PM—42.7 SP,
39.3 EP

Audio Frequency
Response: hi-fi—20
Hz-20 kHz, +0.8/-0 dB;
linear (-3 dB)—65
Hz-10 kHz SP, 65 Hz-4
kHz EP

Hi-Fi Dynamic Range:
88.7 dB

Linear Audio S/N:
39.7 dB

Audio Distortion: hi-
fi—0.3%, linear—0.8%

RATINGS

Picture: excellent

Audio:
excellent/very good

Ease of Use:
excellent/very good

Overall: excellent

the AG-1970 uses Panasonic's five-pin, or Control M, editing interface. You can use this jack to connect the AG-1970 to an editing controller. An editing controller lets you mark video scenes you want to keep, and automatically assembles them on another tape.

Panasonic says the AG-1970 works with its AG-A96 editing controller, but not the older AG-A95. Videonics, maker of several controllers compatible with Control M, says the AG-1970 works with its controllers. Future Video controllers also seem to work—we tried the company's EC 1000, and it worked fine. Typically, you would use two AG-1970s—one for the recorder, one for the player. If you use Videonics' Thumbs Up edit controller, you can substitute almost any decent VCR for the recorder.

A jack on the front of the AG-1970 facilitates a synchro edit setup with synchro edit-equipped Panasonic camcorders. When the machines are connected in this manner, dubbing can be precisely started and stopped at the touch of a button.

The deck offers a few other unusual features. It can decode and record SAP II audio, a feat few decks can match. Its

head drum remains spinning for about 20 minutes after you select stop, so the delay between pressing play and seeing a picture is very short—about one second. It has audio dub, which lets you replace the linear track sound while keeping the picture. Its insert edit feature lets you add new video and hi-fi audio without disturbing the linear-track audio. The insert edit and audio dub features can be used together for a full A/V insert.

Unlike the AG-1960, the AG-1970 lets you mix hi-fi and linear track audio. But we wish Panasonic had included a separate output for linear track audio, which would let you use this track for SMPTE time code while preserving the sound on the hi-fi tracks. We expect third-party manufacturers will offer such a modification.

A search sound switch on the control panel lets you hear the audio when the shuttle dial is set to standard or speed play (in either direction), fast forward or rewind. This can be helpful when you're searching for an audio segment, as you would if you wanted to cut to a new scene after a piece of music ends.

It has a switchable timebase correc-

tor, which helps minimize generation loss in dubbing and can also help improve the picture of damaged tapes. However, the TBC handles only a few lines at a time, rather than a full field or frame, and it doesn't accept external sync. So it's not as effective as a professional TBC, and can't be used to feed a Video Toaster, which requires a signal almost completely free of timebase error.

A switchable noise filter helps improve the picture of noisy tapes, a force mono switch helps bring in weak or noisy stereo signals, and manual fine tuning helps optimize TV reception. The one-touch record is unusual because of its controls. It has plus and minus buttons for start and stop time, which provide to-the-minute control. Most VCRs offer OTR in half-hour steps.

Despite its quasiprofessional pedigree, the AG-1970 will look familiar to most amateurs. Its button-heavy layout resembles that of editing VCRs from a few years back. We consider this configuration much easier to use than the on-screen menus in most recent VCRs.

continued on page 30

FOR BETTER SOUND IN ALL YOUR VIDEOS... CHOOSE NADY!



Nady always offers the best performance and price. We sell more wireless microphones than all other brands combined—proof of Nady's unsurpassed quality.

Now we're introducing more camcorder accessories to make your videos sound better than ever. And every one of them is affordably priced. See them at your Nady dealer today!



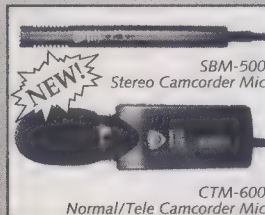
49 VR
Wireless Video Mic



151 VR
Wireless Video Microphone



MCM-400
Real Time Camcorder Audio Mixer



SBM-500
Stereo Camcorder Mic

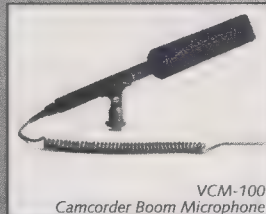
CTM-600
Normal/Tele Camcorder Mic



AVM-300X
Stereo A/V Mixer with Video Fade



551 VR
Two Channel Wireless Video Mic



VCM-100
Camcorder Boom Microphone



VLM-770
Remote Powered Lavalier Mic



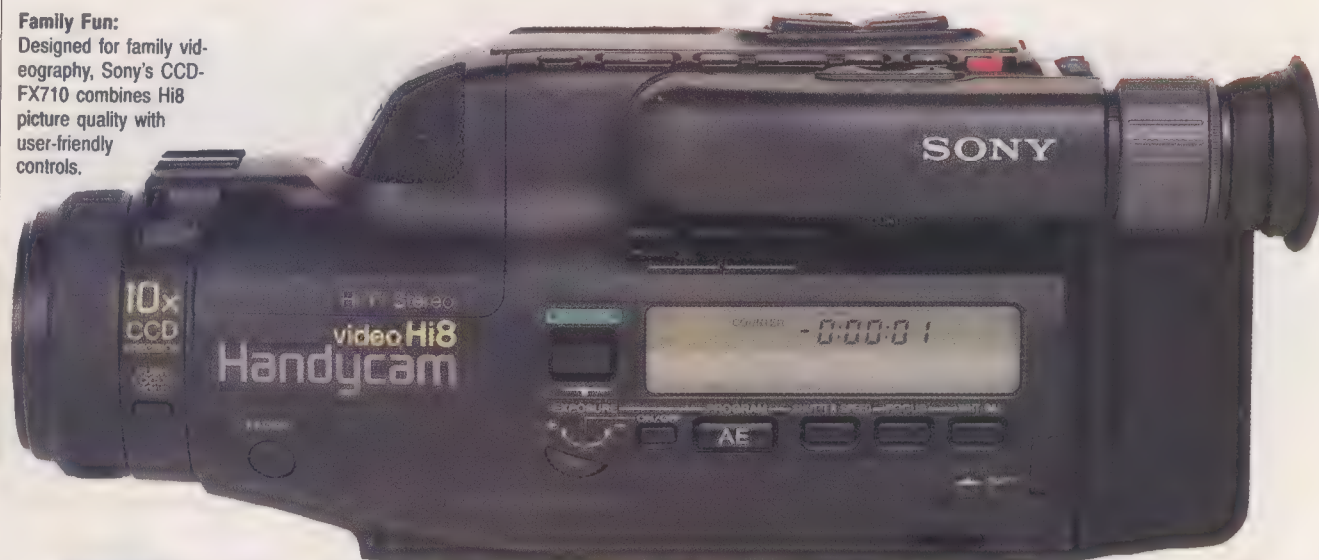
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The Best Performance and Price in Video Camcorder Accessories

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VIDEOTESTS

Family Fun:
Designed for family videography, Sony's CCD-FX710 combines Hi8 picture quality with user-friendly controls.



VIDEOTEST
684

SONY Hi8 camcorder

control. The CCD-FX710 is the first Sony family camcorder to use the Hi8

Sony designs its family camcorders primarily for ease of use. These camcorders—originally the F series, now the FX series—are a little larger than the company's TR-series subcompacts, which makes them harder to pack but easier to

format, which offers a picture about 60 percent sharper than 8mm or VHS.

In addition to features you might expect—a 10x zoom, program auto exposure modes and auto macro focus for close-ups—the FX710 offers many bells and whistles seldom seen in subcompacts. For example, it has jacks for headphones and an external microphone. This lets you monitor the audio and improve it if necessary. With most point-and-shoots, you have no control whatsoever over audio.

One of the FX710's nicest features is its AC adapter/charger. The plate that
continued on page 30

Sony CCD-FX710 Hi8 Camcorder

Price: \$1,400

Weight & Size (h/w/d):
2.1 lbs.; 4-3/8 x 4-5/8 x
10-5/8 inches



Image Sensor: 1/3-inch
CCD, 410,000 gross
pixels

Lens: 1/1.6, 10x
(6.2-62mm) two-speed
power zoom

Filter Diameter: 37mm

**Minimum Focusing
Distance:** 1/2 inch in
wide-angle

Autofocus: TTL inner-
focus continuous to
macro

Minimum Illumination:
4.2 lux

Iris: auto/program/manual

Shutter Speeds (sec.):
1/60 (normal), 1/100,
1/250, 1/1,000, 1/2,000,
1/4,000, 1/10,000

White Balance: auto/
hold/outdoor/indoor

Viewfinder: 0.6-inch
CRT with diopter, indi-
cator for record/low
battery, and onscreen
indicators for white bal-
ance, manual focus,
Hi8, speed, tape trans-
port/title mode, AE
program, counter, tape
remaining meter, power
zoom/exposure meter,
fader, zero mem, re-
place battery, no cas-
sette, dew, trouble/head
clog, battery condition,
age, replace clock bat-
tery, date/time

VCR Controls: stop,
rewind/search, play, fast
forward/search, pause,
record, eject

Microphone: stereo
electret condenser

Jacks: external mic,

headphones, LANC, DC
out for RFU, S-video/
video/stereo audio in/
out

Tape Speeds: SP,
LP (play only)

Video Heads: 2

Cue & Review Search:
forward 9x, reverse 7x

**Fast Forward/Rewind
Time:** 6-1/2 min. for
120-min. tape

Remote Pause: LANC

Remote Control: IR
wireless with hold
switch, zoom rocker
and buttons for start/
stop, play, fast forward/
search, rewind/search,
pause, slow and data
screen

Audio: hi-fi AFM stereo

HIGHLIGHTS

With the CCD-FX710, Sony brings the quality of Hi8 video into

its line of family camcorders. The FX710 is the least expensive Hi8 camcorder we've seen, but it still offers all the features serious videographers need, like a manual iris, a two-speed zoom, a full complement of jacks for audio and video, and a wide selection of shutter speeds. It's slightly larger than a subcompact, which makes it comfortable to shoot with. Picture quality is very good, audio is good to very good and ease of use is very good to excellent, for an overall very good rating. This is one of the best \$1,400 camcorders you can buy.

Titles/Graphics: one-
page digital memory in
8 colors, with reverse
and scroll

Special Features: still-
frame, slow motion, fly-
ing erase head, insert
edit

Absent Features: RC
time code, frame ad-
vance, image stabilizer,
indexing

RESULTS

Horizontal Resolution:
Hi8—400, 8mm—250

S/N Ratios (dB): un-
weighted luminance—
44.7, weighted luma-
nance—50.3,

unweighted video—
44.5, weighted video—
50.7, chroma AM—
44.2, chroma PM—40.3

**Audio Frequency
Response:** 20 Hz-15
kHz, +0.4/-3.1 dB, -9.2
dB at 20 kHz

Hi-Fi Dynamic Range:
76.2 dB

Audio Distortion: 0.3%

RATINGS

Picture: very good

Audio: good/very good

Ease of Use:
very good/excellent

Overall: very good

TODAY'S **VIDEOGRAPHER**

VIDEO Magazine

Advertising Supplement

**Make
Exciting
Home
Videos**



The Latest in Camcorders, Editors & Accessories

Miking The Great Outdoors

As you prepare for outdoor spring shooting opportunities (Little League, Easter, Mother's Day, Graduations, etc.), it's important to remember that the weakest link in your camcorder is the microphone — particularly when shooting at a distance. Nothing is more frustrating than getting great shots of your subject, but picking up all kinds of extraneous noises! A quality wireless mic really helps!



The Azden WMS-PRO VHF (\$250 suggested retail) microphone system is the most versatile wireless microphone around. It has a range of over 250 feet and it operates in the interference-free 169 MHz to 172 MHz range. It also has two switchable frequencies, so that you can select the clearest sound available.

The miniature receiver (smaller than a cigarette pack), attaches to the camera with a shoe mount or

Panasonic AG-3



Panasonic offers the professional edge

A powerful professional S-VHS-C camcorder, the 3-CCD AG-3 from Panasonic has it all.

PANASONIC Broadcast has recently introduced a professional camcorder that has such high image quality and ease of use that it could be used by a professional or amateur videographer. The S-VHS-C AG-3 camcorder (\$3,300) has all the compact and lightweight (just over two pounds) advantages that all VHS-C camcorders have,

but it produces images in the S-VHS format, a high-quality video format that is used by many professional videographers. Adding to the clarity of the image are three separate 1/3-inch CCDs. These CCDs produce a dynamic 530 lines of horizontal resolution at a signal-to-noise ratio of 45 dB. What all these numbers add up to exceptional video that can display vivid colors even in light levels as low as one lux.

More than just a pretty picture, convenience features abound. On top of a color viewfinder, 20x zoom, digital time base corrector, electronic image stabilization, and digital noise reduction, the AG-3 has digital special effects that include strobe, snap shot, picture memory, and wipe and mix. On the audio side, high quality is provided by a stereo zoom microphone with Hi-Fi recording.

For cinema lovers, or for those that plan ahead, the AG-3 has a widescreen recording mode that shoots in the 16x9 aspect ratio. When played on standard equipment, it provides a letterboxed effect like that of a laserdisc. When played on a 16x9 widescreen television, however, your video production fills the entire theater-like screen. 16x9 televisions are just beginning to appear in manufacturer's product lines, and it is the same aspect ratio that high definition television (HDTV) systems will use regardless of what standard is adopted. So the AG-3 makes sure that you keep up with the times.

Bring out the pro in you with Panasonic Broadcast's AG-3 S-VHS-C camcorder.

velcro (both supplied), or you can put it in your breast pocket. It plugs into the camera's Ext. Mic. jack. An earphone for monitoring the sound is supplied. There's also a swivel antenna for optimum flexibility in reception and mounting.

The miniature transmitter has a clip for attachment to the subject's belt, and comes with both a lapel microphone and a handheld microphone. Use whichever one suits your application. For instance, in action scenes, the lapel mic is better, but for interviewing and speeches, you can use the handheld.

Whatever your needs, the WMS-PRO will be able to deliver superior sound to all of your video productions.

The World's Easiest Video Editor

Modern camcorders have made it easy to shoot video footage. But sometimes the footage is harder to watch than it is to shoot! The answer is editing, and now there's a fast, easy way to



edit that's as simple as giving your videos a Thumbs Up!

Thumbs Up (\$229) from Videonics is a radical new concept in home video editing. To use it, simply play your camcorder tapes and press the THUMBS UP button when you see video you want to keep. Press the THUMBS DOWN button when you see video you'd rather forget. Thumbs Up does the rest, recording the good segments and leaving the rest behind.

Thumbs Up works with virtually all camcorders and VCRs. It also supports advanced features like Control-L and timecode. You can mark up to 62 scenes.

Thumbs Up! The fastest, easiest home video editor!

Getting The Most Out Of Your Toaster

The Video Toaster is the most revolutionary piece of equipment to hit the video market in the last two years. It puts \$100,000 worth of studio-grade capabilities in the hands of the average videographer for under \$6,000. The Toaster is a capable and professional piece of equipment — and it comes with a manual the size of the Manhattan Yellow Pages!

The Video Toaster "Quick Start" tape series from Dark Horse Productions covers the most asked questions about the Video Toaster. These tapes will take you from complete novice user to expert. They are designed to cut the Toaster's formidable learning curve



Canon UCS3

Canon presents a portable powerhouse

THE CURRENT TREND in camcorders is to have compact designs with numerous features, and few models better exemplify this trend than Canon's UCS3. The UCS3 gives you the ability to shoot captivating videos in the dynamic Hi8 format.

The camcorder's design is like that of the company's popular UCS1 — a narrow model that can be held comfortably and steadily with a single hand through the strap on the side. The unit is lightweight, weighing in at a mere 1.5 pounds, and includes a detachable wireless remote onto its tiny frame.

As far as features go, the UCS3 is just about bursting at the seams. First, there's the three-speed 12x power zoom lens and the 64-zone auto white balance system. Add to this a six-mode programmable AE system that includes Sports, Portrait, Spotlight, Landscape, Sand & Snow, and Low Light modes, and you already have a sharp shooter.

But wait, there's more — much more. The UCS3 incorporates digital signal processing (DSP) that not only keeps the size of the camcorder down while still achieving the same effects as a larger unit, but also makes a clearer image by decreasing the amount of color noise, dot interference, and color smearing. Other digital effects include a digital

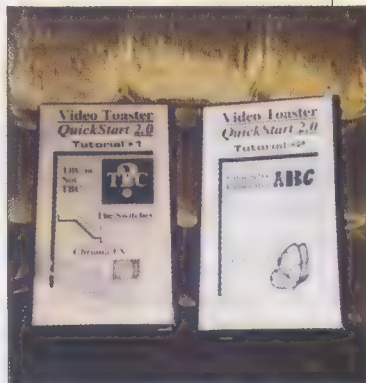
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*Canon's UCS3
8mm camcorder
packs an extensive number of
features into its
compact shell.*

TODAY'S VIDEOGRAPHER

from weeks to hours.

These tapes are chock full of practical "how to" advice in clearly defined and easily followed sequences. Basic switcher capabilities, digital video buffers and effects, startling Chroma/FX video special



effects, capturing and "photo retouching" video frames, character generator and advanced luminance keying techniques are all covered.

If you already own a Toaster or are interested in learning what the Toaster can do for you, these tapes are a wise investment. For only \$89.95 (p.p. in the USA), you will see exactly what the Toaster is capable of in the hands of the average videographer. If you do own a Toaster, you will learn how to do things you never even thought of.

Find out more by calling Dark Horse Productions at 800-442-9660.

Please Don't Call Them "Accessories"

Lenmar Camcorder Performance Products are not replacement parts — or gimmicky gadgets or accessories.

TODAY'S VIDEOGRAPHER

Every piece has been meticulously designed and carefully manufactured to help you get the most out of your camcorder and put more into your videos.

For example, take the Lenmar VQ205 QwickFlip™ — the most versatile lens available. Its 2.0x telephoto capability doubles your camcorder zoom lens. Without removing the lens from your camcorder, flip it and you can increase your field of view by 50 percent.

Another simple way to improve the quality of video is to choose the intensity of light needed with Lenmar's VL60 TwinSunspot 20- or 30-watt variable power video light. Its horizontal design projects a light beam directly on your subject for brighter colors, and the pivoting bracket allows for indirect bounce lighting. The VL60 accepts Canon, Sony, Panasonic, JVC, and other 6V batteries.



Contact Lenmar at 800-424-2703 for information on these and other performance products.

Matrox Personal Producer



Matrox makes video magic on a computer

MATROX PERSONAL PRODUCER is the first complete solution that lets you easily and economically create professional-quality video productions on the PC desktop. The package lets you assemble and edit video segments, audio clips, graphics, and titles then add special effects and transitions simply by arranging the media elements on visual timelines under an intuitive Windows interface.

To make a videotape, you first catalog all your source material using the clip editors. Then, with simple point-and-click operations, you arrange all your clips on timelines in a storyboard. At any point you can preview your entire production or any part of it until you have just the right look. When you're happy with your result, with just the click of a mouse, Personal Producer takes control of all your source media and the record VCR to produce your final videotape automatically. Personal Producer gives you several deck control options for a wide range of VHS, S-VHS, and Hi8 prosumer, industrial and professional VCRs and camcorders, Sony VISCA and LANC devices, Panasonic 1960/1970, AG-5700 and AG-7750 series VCRs, and many more.

Mathematica Tempra Pro graphics and image retouching software is included to let you create graphics using 32,768 colors to enhance still frames that you capture from your

(continued on Supplement page 7)

Matrox's Personal Producer turns your personal computer into a video editor and special effects generator.

Top Off Your Battery Charge



An important part of any camcorder set-up, batteries require special care in order to continuously perform to their full capabilities. If not, they hold less power, cutting off when you least expect it, and require constant recharging — a long process. Batteries are also expensive to replace, so a charger like Arkon's TC-600 Turbo Camcharger can save you time, money, and many hours of frustration over missed opportunities.

The TC-600 is compatible with virtually all 6-volt 8mm and VHS-C nickel-cadmium (NiCd) camcorder batteries and is unique in that it is the first combination quick charger and conditioner to feature Top Off charging. Top Off charging compensates for the wide variances in battery design that can cause as much as a 20 percent undercharging. The TC-600's measuring circuitry doesn't rely solely on voltage measurement, so the battery is charged to its fullest extent.

The TC-600 charges in

three stages. The first stage discharges and reconditions the battery, removing all "battery memory." Stage two involves rapidly charging the battery, sometimes as quick as one hour. The third stage utilizes the Top Off circuitry to bring the battery to its full capacity.

Another convenient feature is the battery status indicator, consisting of three LEDs that continually depict the battery's progress. The TC-600 has a suggested retail price of \$99.95. For more information, contact Arkon Resources at 818-358-1133.

Videography Goes Hollywood

Most of us have seen Hollywood-produced reels where a large slate board was snapped down at the beginning of the scene. Now you can do the same with the Pro-Slate from Polaris Industries. In addition to giving your production a more theatrical feel, the Pro-Slate proves its worth in the editing room. There are spaces on the slate for scene number, title, take number, and more, letting you know

JVC GR-AX55



JVC's camcorder captures memories

The weather's warmer and those outdoor activities are calling — get it all down on tape with JVC's GR-AX55.

side. The program modes include sports, for fast action shots; portrait, which reduces depth of field to make the subject stand out; back-lit compensation and front-lit compensation, both of which correct for uneven lighting conditions; twilight, which makes for natural looking evening scenes; and monotone, which lets you recreate the look of an old movie. Also helping you capture the most vivid images possible are a 10x power zoom lens, a 2-lux light sensitivity, and a built-in video light.

After the Sun has set and the shooting is over, just pop the VHS-C cassette into the included Playpak and it is ready to be shown on your VHS VCR. If editing is required, the GR-AX55 features random assemble editing (R.A. Edit), which lets you automatically edit your camcorder shots in any desired order, directly to your home VCR. JVC's R.A. Edit system is compatible with 14 major VCR

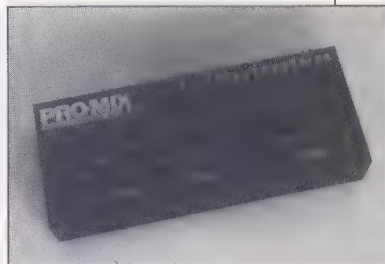
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TODAY'S VIDEOGRAPHER

exactly what scene you are about to see.

On the reverse side of the Pro-Slate is a video camera test chart for on-scene calibration. The test chart has color bars and charts to check for color alignment, line resolution, white balance, contrast, and multi-burst. The arms of the Pro-Slate are made of steel plating to assure a sharp clap for the beginning of each scene.

Speaking of the editing room, Polaris also manufactures the Pro-Mix audio mixer and video enhancer. As an audio mixer, the Pro-Mix has three stereo audio inputs, separate left and right fade controllers for each audio input channel,

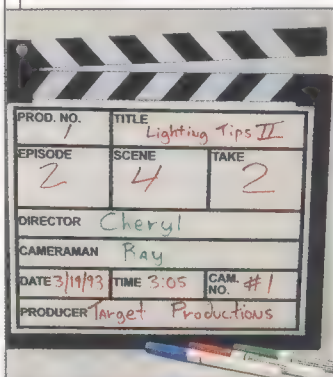


and a microphone input for narrations or voiceovers. The video enhancer side of the Pro-Mix enables the user to reproduce videos without signal loss. For superior quality, the Pro-Mix is equipped with gold connectors for both audio and video.

For more information on both of these products, contact Polaris Industries at 800-752-3571.

Smooth & Steady Pan Combination

No matter how interesting the subject, jumpy and jit-



tery videos are distracting and unpleasant to watch. With today's compact camcorders, the tendency for

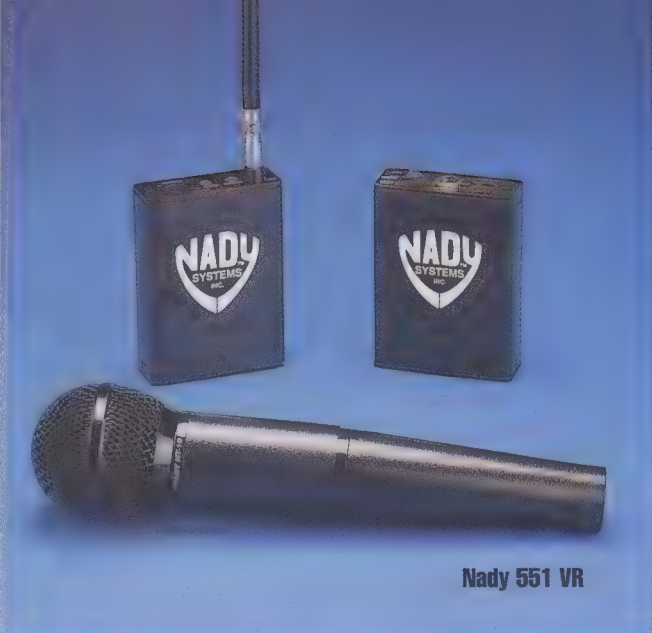


shaking in the scene has increased, which is why it is important to keep things steady with a tripod and smooth with a fluid head.

Bogen offers the best of both worlds with their 3140 cine/video tripod. The 3140 combines strength and portability in a lightweight (11 lbs., 6 oz.) unit that extends to 73 inches but stores to a compact 32 1/2 inches. For greater rigidity, the 3140 has a double strut, center-braced, all-aluminum construction.

That takes care of the steady part, but what about smooth? To follow the action and leave the shakes behind, the 3140 includes the Bogen 3063 mini-fluid head that features a quick release and adjustable handle that guides the camera in any direction. The fluid head also has separate pan and tilt locks and vertical drag is continuously possible.

The Bogen 3140 makes it easy and inexpensive to bring a higher quality to your home videos.



Nady 551 VR

Nady goes footloose and wire free

FOR REALLY clear sound from a camcorder, it is often necessary to use more than just the microphone built into the camcorder, especially when shooting more than one person or subject. And the last thing you want to do after buying a lightweight compact camcorder is add a bulky external microphone to it. That's where Nady's 351 VR compact wireless microphone system (\$299.95) comes in.

The 351 VR features Nady's smallest receiver ever — about the size of an audio cassette. The receiver fits unobtrusively to even the most compact camcorder or can be conveniently worn on a belt. Hook up is accomplished by simply attaching a cord between the 351 VR and the camcorder's external mic jack. Just because it's small, however, does not mean it's not powerful — it can pick up all the audio action from more than 200 feet away.

The system includes one of Nady's latest wireless microphone transmitters in addition to the receiver. For handheld needs, the HT-10 provides a rugged all-metal



Nady 351 VR

Nady's wireless microphone systems give added flexibility and better sound to your videos.

Camcorder Accessory Gear Guide

✓ **Case or Bag.** Look for something lightweight, with plenty of dividers and pockets that will expand with your growing collection of gear. Make sure the strap is comfortable!

✓ **Tripod.** Make sure it is designed for video, not for still photography; look for a fluid pan head, lightweight aluminum construction, and quality pan/tilt gears.

✓ **Brace.** Sometimes you have to move and a tripod won't do. Some sort of brace or prop is also advised. The Steadicam Jr. is highly recommended here.

✓ **Auxiliary Batteries.** You never have enough juice. So bring along backups and, of course, make sure they are already charged. Several battery rechargers plug into your car battery in case you still run low while in the field.

✓ **Lights.** Of course, you need a light that plugs directly into your camcorder. But, if you are really serious, separate studio lights (with their own stands) are also recommended.

✓ **Microphones.** Several different varieties will help improve your video's sound. At least one wireless mic and one shotgun should be tucked into your production accessory sack.

✓ **Lens Adapters.** For those tough-to-get shots, an add-

(continued on Supplement page 8)

on telephoto lens adapter will come in handy. The 2x magnification variety generally does the job.

✓ **Color Monitor.** A portable TV will help you get a better picture of what you've captured on tape than the EVF. If you don't mind the load, a small CRT is advised, but for lighter loads a portable LCD model is still an improvement.

✓ **35mm Camera.** Yes, don't forget a camera. Still photos will come in useful during the editing process (that is, if you are equipped with a converter like the Tamron Fotovix). An electronic still camera is an alternative that is especially valuable for desktop video editing and effects.

Canon UCS3

(continued from page 3)

titler that can store two pages and display in "see-through," "wiped," or "shadow" modes and digital effects like freeze, art, close-up, and overlap.

In addition to the aforementioned titler, the UCS3 has a built-in character generator with an auto date function, so titles can be created anywhere and at any time. Also included is a fade function that can be synchronized with the camcorder's start/stop button to perfectly time the fade with the beginning and end of a scene.

A choice of 12 shutter speeds permit recording fast action at 1/10,000 of a second. Slow speeds down to 1/8 of a second allow recording in extreme low-light condi-



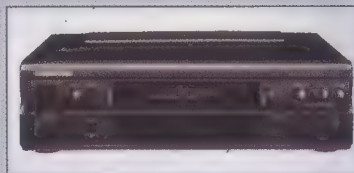
Samsung 8mm shoots and shows

Samsung's VCR and camcorder make a dynamic duo for capturing and viewing 8mm memories.

ALTHOUGH A high-quality video source, 8mm tapes cannot be played back on standard VCRs, prompting the user to play back the video through the camcorder, causing wear and tear on the camcorder transports. Samsung, however, has a way that you can have your 8mm cake and watch it too.

The first step is shooting with a quality camcorder like Samsung's SCX953 compact unit. Weighing only 1 3/4 pounds, the SCX953 features an 8:1 zoom ratio, digital auto focus, and auto iris. This model also includes an eight-color titler and a wireless remote control. It can shoot in as little as two-lux illumination, and sound quality is assured with Hi-Fi stereo sound.

After the shooting is done, bring the tape home to Samsung's XD3500 VCR and simply pop it in. If you are on the run, the XD3500 can go with you, being compact and lightweight (4.4 pounds). This unit packs many of the features you would look for on a VCR, including on-



Samsung XD3500

screen programming, eight-event/365-day programmability, Hi-Fi stereo, and special effects like slow motion, single frame advance, and double speed playback. The XD3500 can also play back pre-recorded 8mm movies.

The units can also be used together for editing. Both feature flying erase heads for seamless edits and the SCX953 has an edit search function built in. To find edit points easily, the XD3500 has a 9x forward picture search and a 7x reverse picture search.

With these two units, enjoying 8mm footage becomes easy and, in the long run, will increase the life span of your camcorder.

tions and produce creative blurring effects.

Let us not forget the audio portion of the UCS3. A zoom-linked stereo microphone with a wide 150-degree and a narrow 90-degree setting pulls in dynamic audio in AFM stereo sound — so your images sound as good as they look.

Check out all the UCS3's features at your nearest Canon dealer.

Matrox Personal Producer

(continued from page 4)

video footage. Image North Technologies' Inscribe/CG character generator software is also included to let you roll and crawl titles in your productions. If you have an MPC compatible sound board in your system, the bundled Turtle Beach WaveLite digital audio editing software will let you record, edit, and play back digital audio from your hard disk. Personal Producer synchronizes the digital audio with the rest of your production.

Dozens of different transitions — wipes, slides, pushes, fades, and dissolves are supported using a single video source. Transitions are performed between the last frame of clip A (freeze frame) and the live action of clip B, achieving the look of high-end A/B roll systems at a dramatically reduced cost. Eye-catching digital video effects including solarization, mosaic, video-in-a-window, trailing, kaleidoscope, strobe, and multipic-

tures add excitement to your video productions.

Priced at \$1999, the basic hardware/software bundle includes a Matrox Illuminator-16 videographics board, Personal Producer editing software, Inscribe/CG character generator software, Tempa Pro paint software, and WaveLite digital audio editing software.

For more information and a free demo tape, contact the Matrox Video Products Group at 800-361-4903 or 514-685-2630.

JVC GR-AX55 Camcorder

(continued from page 5)

brands, giving a majority of consumers the ability to utilize the VCR already in their home. The included remote is also able to control playback operations as well as zoom and trigger control.

If you are away on vacation, use the camcorder as a VCR by simply connecting it to the hotel's television. The wireless remote allows full playback control from the comfort of your chair as you review the day's activities.

The GR-AX55 includes all the conveniences one finds on all JVC camcorders, including a flying erase head, full-range auto focusing with auto macro, high-speed shutter, and an auto date titler. It also has some surprises including a Cinema Mode that lets you achieve a widescreen look (perfect for you film lovers).

Don't miss a moment of the season's activities — capture it all with the JVC GR-AX55.



RCA Pro883HB

RCA Gets a wider perspective

GET NEAR-PROFESSIONAL quality videos from a compact camcorder with the RCA Pro883HB sub-compact model from Thomson Consumer Electronics. The Hi8 format delivers over 400

lines of horizontal resolution, giving your video productions laserdisc-like clarity. In addition to the dazzling picture, the Pro883HB records in both the standard 4x3 aspect ratio as well as a widescreen 16x9 mode that creates a cinema effect.

The RCA brand includes a full line of camcorders equipped with the 16x9 recording capability. When played back on a standard color TV, the picture appears in a letter-box format with black bars at the top and bottom. For those who invest in Thomson's 16x9 CinemaScreen television, the black bars disappear to reveal the full impact of widescreen video-making.

The lightweight (1.3 lbs.) Pro883HB is loaded with additional convenient features. Electronic image stabilization (EIS) takes the shakes and jitters out of scenes shot without the benefit of a tripod or brace. Another impressive feature is the 16:1 zoom ratio that can be digitally extended up to 64:1.

To keep your video presentations interesting, the Pro883HB offers a full alphabet titler and a three-phase fade function. The fade, in addition to fading to black or white, can fade in the middle of a zoom-in or -out. This gives the impression that you are being carried in or out of the subject being recorded. Further enhancing the excitement of your productions is a digital filter that can change a scene to black and white or, in another setting, enhance the reds in a scene creating a stunning, fiery effect.

The Pro883HB's AFM Hi-Fi stereo sound complements the images with ear-pleasing sonics.

As you would expect with a high-quality camcorder, all the standard conveniences are here, including a remote control, 2-lux minimum illumination, and variable shutter speeds which are automatically selected.

To start shooting cinema-like home videos today, contact your nearest RCA dealer.

RCA's 16x9 camcorder gives home videos a new look.

Nady Wireless Microphones

(continued from page 6)

case and a stylish tapered, balanced body design. If a lavalier mic better suits your needs, the LT-20 supplies the tiny mic attached to a surface mount technology (SMT) bodypack transmitter designed in a compact case that, like the receiver, can be attached to a belt. Both microphone transmitters are equipped with a transmitter on/off switch, an audio on/off switch, level trim, and a low battery LED.

The entire system runs on one of four VHF frequencies available — meaning that up to four camcorders can be recording four different audio tracks simultaneously.

Also from Nady is the 551 VR wireless microphone system (\$799.95). Like the 351 VR, the 551 VR is ultra-compact and includes the HT-10 handheld microphone. What separates the 551 VR from the 351 VR is that the 551 VR has two user-selectable channels, allowing you to switch between channels to find the clearest one available.

The SX/LT-30 lavalier bodypack is included with the 551 VR and features two-channel switching, a mini XLR connector to accept any electret condenser microphone, and a sturdy metal case. The LT-30 has the same switches and LEDs as the HT-10 and LT-20.

So hear what you've been missing with Nady's wireless microphone systems.

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Don't miss a moment of the season's activities capture it all with the GR-AX55.



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CIRCLE SHOWCASE #4

Hi8 CAMCORDER

continued from page 18

connects the camcorder to the adapter also carries video and audio signals, and conducts them to video/stereo audio outputs on the adapter. This arrangement lets you connect the adapter permanently to your system. All you have to do to play your videos is connect the charger plate, then sit back and enjoy. The camcorder has a remote control that lets it operate much like a table-model VCR. This should calm the fears of those who avoid 8mm and Hi8 be-

cause they don't want to reconfigure their system every time they play a camcorder tape.

The FX710 gives experienced home videographers all the control they need. It has a powered manual focus ring, which is more accurate and comfortable than the plus and minus buttons used on many camcorders. A focus hold button locks the autofocus, which is very convenient when the autofocus is likely to misbehave (as all do at times).

It offers seven shutter speeds. These can be used as an alternate exposure control when you want to use a certain iris setting, and they can also be used to

achieve noise-free still-frames and slow motion for sports videos and motion analysis. There's a thumbwheel for manual iris control, and an indicator in the viewfinder tells you the iris setting.

If you don't understand how to use these features, don't worry—the FX710 has two program auto exposure modes that will help. The portrait mode minimizes depth of field so that only the subject is in focus. The sports mode selects the maximum shutter speed possible, for clean still-frames and slow motion.

Using the FX710 is very easy. Because it has more surface area than subcompacts, the controls and displays can be larger and more logically grouped. In auto lock mode you need only concern yourself with zoom, the standby switch and the run/stop button. All the manual controls can be easily adjusted, and all offer a complete set of displays in the viewfinder, most of which are repeated on the large external LCD on the side. For playback, all buttons are large and conveniently grouped. Ease of use is very good to excellent.

The FX710's picture quality is very good compared to that of other Hi8s—about in the league of Sony subcompacts like the CCD-TR200. Audio quality is good to very good for 8mm.

This camcorder easily deserves a very good rating. It's very affordably priced, its picture quality is outshined only by much more expensive machines, and it lacks no important features. ■

S-VHS VCR

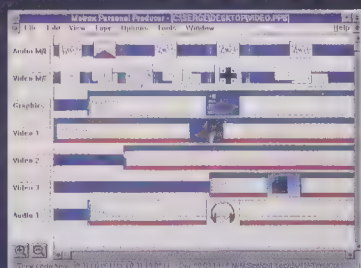
continued from page 17

The remote control, however, is unusual in its simplicity. It has exposed buttons for VCR transport functions like play and stop. The top surface slides backward to reveal buttons for functions like record, slow motion and channel select. Unfortunately, two important controls—antenna/rear/front input select and counter reset—are found only on the remote.

If you understand the features of the VCR, you will have no trouble accessing them. It may seem that slow motion is accessible only through the remote, but since the shuttle ring is not spring-loaded, it performs the slow motion control on the deck. The manual is vague compared to traditional consumer manuals, so this deck is not for beginners unless they take the time to experiment with the controls. You'll be pleased with its responsiveness. Ease of use is excellent to very good depending on your needs.

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those of the best consumer VCRs. Hi-fi audio quality is excellent and linear track audio quality is very good. All in all, you can't find a consumer VCR that performs significantly better.

Anyone who's looking for a top editing deck, but can't afford to spend the extra thousands on a professional machine should strongly consider the AG-1970. ■

Hi8 VIEWCAM

continued from page 15

camcorder on a table. Nearby is a latch that releases the tape hatch—tapes fit into the front. There's a set of S-video/video/stereo audio outputs, which double as inputs, on the side.

Above the screen are up/down buttons for picture and volume, plus an adjust button, which selects the picture parameter to be adjusted. The top panel has a tiny speaker active only in VCR mode, plus counter buttons and menu controls.

Below the screen sit the playback controls. These are labeled, but they also have legends that appear onscreen, along the bottom. The legends are white, and the one for the button in use turns green. The legends may be switched off.

These playback controls double as controls for camera functions: shutter speed, white balance lock, autofocus on/off, and focus near and far. Holding down the full auto button below activates the controls and calls up their onscreen legends. The manual focus buttons are a little tough to use, and even in manual focus mode, the focus can drift a bit during zooms. You have no control over exposure, and there is no backlight compensator.

Near the bottom of the camcorder are buttons for index search, full auto, fade and record (for use in VCR mode). It also has jacks for headphones and an external microphone. The tiny remote control has controls for run/stop, zoom, all playback functions and volume.

The difference between using the ViewCam and other camcorders is like the difference between operating a car and a motorcycle—that is to say, rather tremendous. However, Sharp obviously put a lot of thought into the control layout, because the camcorder feels completely natural.

The shape makes it easy to hold and view, but your arms could tire during a long shooting session like a sports event. One source of relief is to shorten the shoulder strap and hang the camcorder around your neck. You'll have to be ex-

continued on page 39

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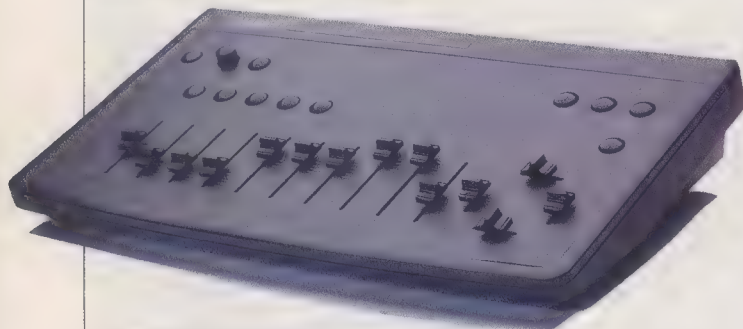


▶ A PROTON WITH PIP

Proton's new NT-337 31-inch monitor/receiver (\$2,200) features picture-in-picture when used with a separate VCR or A/V receiver. An audio mode selector offers choices of movies, music or mono. The set has front-panel A/V inputs as well as three sets of A/V inputs/outputs on the back panel, plus two S-video inputs. (For additional information, circle 102 on the Reader Service Card.)

▼ STUDIO IN A BOX

Ambico's V-6325 A/V editing effects processor (\$380) performs fades to a variety of colors at varying speeds. The special-effects generator can produce several wipe patterns, and the stereo audio mixer has inputs for two sources along with a microphone input. A mic is included. (For additional information, circle 100 on the Reader Service Card.)



▼ VIDEO SECURITY

Video Lockers pop into the takeup reel of VHS cassettes and protect against accidental recording or viewing. Once in place, the locker is removed with a key. They're priced at about \$1 apiece. (For additional information, circle 106 on the Reader Service Card.)



▶ SOUND TOWERS

Sony offers a simple solution to home theater sound with the five-piece SA-VA3 system (\$950). A Dolby Pro-Logic decoder and amplifier is built into one speaker cabinet, while a subwoofer rests in the bottom of each speaker tower. The towers also contain angled drivers to create a center-channel sound-field. Connections are also available for an outboard center channel. Rear speakers and a remote control are included. (For additional information, circle 103 on the Reader Service Card.)





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CAM CORNER

BY CLIFF ROTH

Top techniques for terrific titling

There's probably no better, less costly way to add professional polish to your tapes than with good titles. For example, bracketing your tapes with beginning and ending credits adds a sense of wholeness and closure. Using titles to break lengthy tapes into segments—say, dividing your *European Tour '93* into sections on each country—maintains viewer interest. Titles can provide pertinent information or they can simply be a fun, creative, occasionally goofy part of your home videos.

You don't need anything special to make great titles. Most camcorders incorporate titling capability, and a computer or a dedicated titler can add even more titling power. But there's nothing wrong with going low-tech.

There are plenty of easy ways to create engaging original title artwork with any camcorder—just create the title, then shoot it. For starters, you can scrawl titles with chalk on a sidewalk or a blackboard. Press-on letters, stencils and ink stamps offer quick, neat lettering. The refrigerator-magnet alphabet is an old standby. For a more avant-garde look, paste together bits of newspaper headlines. Of course, you can always draw freehand on a sheet of paper.

Instead of showing an opening title all at once, try creating a quick animation by adding one letter or word at a time. Mount the camcorder on a tripod to keep it still, and record the sequence in half-second intervals.

Most camcorders have digital superimpose titlers that let you do more sophisticated titling. These titlers electronically remember outlines of a freeze-frame image. Technically, a digital titler is a high-contrast luminance keying system, meaning that titles are superimposed over the live video image.

Digital titles appear as silhouettes of the original artwork or lettering, in one of eight colors—black, white, yellow, blue, red, green, cyan or magenta. (I recommend you use yellow—some colors, like red and blue, should be avoided because they don't contrast well.) Creating digital artwork can be as simple as holding a business card in front of the camcorder and pressing the memory button.

Titles look best superimposed over shots of events they describe. "Our Family Vacation" looks great over shots of

the family driving down that ribbon of highway. "Bill and Sally's Wedding" superimposes nicely over a shot of the church or synagogue.

If you edit in-camera and want to add opening titles after the shoot, your camcorder must be able to make insert edits. All 8mm and Hi8 models can do this, as can most VHS-family models. Leave space at the beginning of the tape for this. Instead of shooting a real location, use a picture postcard or a sheet of colored paper as the title's background. Choose a contrasting color—for yellow or white titles, use a dark background.

Generate lettering for these titles using the techniques described above, or with a computer. Desktop publishing software can create printed type, or you

can shoot text directly off the computer screen. Computers can also be adapted to work as character generators.

A character generator, or CG, creates electronic letters and numbers on a video screen. Sophisticated, stand-alone CGs have full keyboards for typing in text, but most camcorders with built-in CGs are more cumbersome than keyboards, since you must repeatedly press a button to cycle through the alphabet.

Camcorder CGs can usually create one or two lines of uppercase text, appearing in block letters in the screen's center. An advantage of some CG titlers, as found in many RCA and Hitachi camcorders, is that the titles can be superimposed after the shooting is over, on playback. This assumes that you're editing the tape by selectively copying scenes to another videocassette.

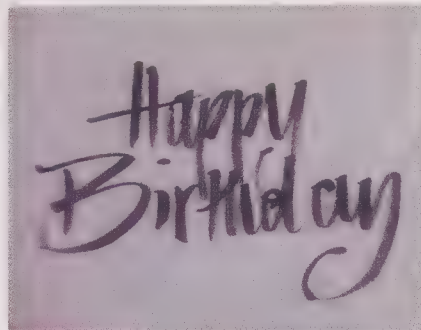
Stand-alone character generators offer more pages, fonts, type sizes and features. They must usually be used during editing, although some plug directly into a camcorder. Videonics' \$500 TitleMaker is probably the best value in a CG—it offers dozens of formatting options.

You can also use a computer to generate titles. If you have a Commodore Amiga, all you need is software like Inovision Technology *Broadcast Titler* or Zuma TV Text, because Amigas have NTSC video output jacks. You need to add a device called a genlock (costing from \$200 to \$1,500) for superimposing. Some paint programs, like Electronic Arts' *Deluxe Paint 4*, even let you create animated titles.

IBM PC-compatible and Apple Macintosh computers require adding a video output board to convert the computer signal to NTSC. Such boards, like AITech's PC-TV, or more advanced in out boards like Matrox's *Illuminator* and Truevision's *Targa* for IBM, and Flamingo Graphics' *Bola32* for Macintosh, cost from hundreds to thousands of dollars. You'll also need software, like Entropy Engineering's *Video Titler*.

This type of fancy titling gear makes sense for the serious semipro producer, but shouldn't make you feel that you have to spend thousands for casual camcorder projects. Simpler, low-cost (and more fun!) artwork titles will do the job—keeping your viewers entertained—just fine.

Title Trio: Titles created with hand printing (below), a digital superimposer and typeset print (center), and Videonics' TitleMaker (bottom).





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BY RON GOLDBERG

Surround sound goes digital with Dolby's AC-3

Although it has taken a few years, Dolby surround sound has finally slipped into the mainstream. Multichannel audio/video receivers rank among the hottest products on the market. We're even starting to see Pro-Logic decoding in inexpensive minicomponents. But now that Pro-Logic has made it, will it be the surround standard forever? Probably not—it seems Dolby Labs has another trick up its sleeve.

Dolby's new technology is called AC-3. It's basically a digital reworking of the Dolby Stereo standard the company pioneered in the 1970s. Dolby envisions AC-3 as a two-tier technology. The first step—which has already begun—is to encode theatrical films with digital surround sound. The sound is recorded optically on the film between the sprocket holes. Theaters use a dedicated hardware setup called Dolby SR-D to play the sound. The second step will bring AC-3 to consumers as a higher-performance alternative to Pro-Logic.

AC-3 is a low-bit rate (compressed) digital audio encoding system that combines multiple surround-sound channels into a single composite signal. The sys-

tem consists of five independent, full-bandwidth channels—left, center and right in the front, left and right in the rear. Because there's also a limited-bandwidth subwoofer track, Dolby calls AC-3 a 5.1-channel system.

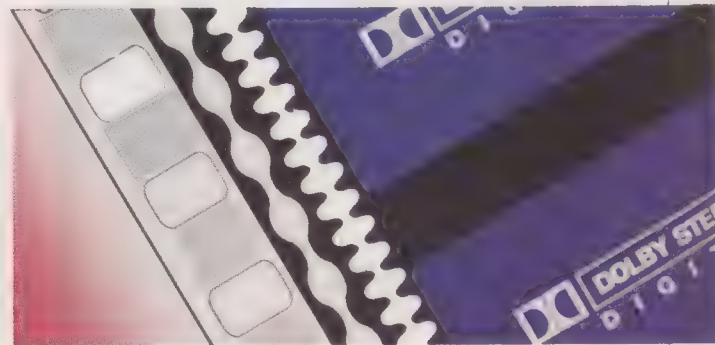
This is a clear improvement over the monaural, limited-bandwidth rear channel that today's surround systems offer. Naturally, the system is also compatible with stereo playback, just as you can play today's surround-encoded movies through a two-channel stereo system. Dolby says AC-3 offers other advan-

tages, too, including better uniformity for dialog and a selectable dynamic range limiter for playback.

This last feature may seem odd—why would anyone want to compress the dynamic range of their movies? Actually, it's quite useful. Instead of having to jump for the volume control every time you watch a video with wide dynamics (like the Indiana Jones movies), you could set a comfortable level that won't trouble your speakers or your neighbors. With AC-3, the user can bypass this feature at any time.

Sound Between the Sprockets:

Dolby's SR-D film sound system uses the spaces between film sprocket holes to hold optically encoded, digital multichannel sound. The conventional optical soundtracks sit to the right of the digital tracks.



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Professional Dolby SR-D is already in use in movie theaters. The first commercial SR-D release was *Batman Returns*. At present, 120 theaters worldwide are equipped to handle SR-D, although not every film played in these theaters is encoded this way.

For consumers, Dolby envisions software that will be recorded with both AC-3 and traditional Dolby Surround information. The AC-3 information will be placed on the digital tracks of a laserdisc, with traditional Pro-Logic sound still accessible from the analog channels. In this way, existing equipment or software doesn't become obsolete.

Dolby predicts the consumer version of AC-3 will probably show up on the market within two years. "It's not that Dolby's not ready—the technology is there," says Michael DiCosimo, East Coast director of Dolby Lab's film division. "It's a matter of hardware manufacturers having to find a space in their product line." The first manifestation of AC-3 will undoubtedly be an outboard decoder that will connect to existing A/V systems, just like the first Dolby Pro-Logic decoders five years ago. However, Dolby is working with a company called Zoran to put AC-3 circuitry on a single chip. Eventually, these chips should end up on A/V receivers.

Of course, technology isn't the only determinant of product success—just ask any Beta owner. Hardware manufacturers have been slow to jump on the AC-3 idea because they expect difficulties in consumer acceptance. According to Buzz Goddard, Lexicon's director of consumer products, Dolby may not be the eventual standard-setter for digital surround. "Dolby's not the only game in town, and frankly, the town isn't even on the map yet," says Goddard. "This stuff is all great in theory, but there are going to be other companies involved in audio data compression." At this point, Sony and a European company called Musicam, among others, are working on schemes for compressed multichannel sound.

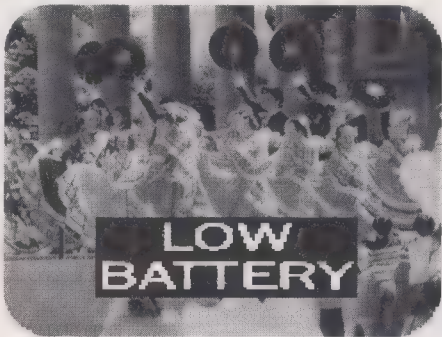
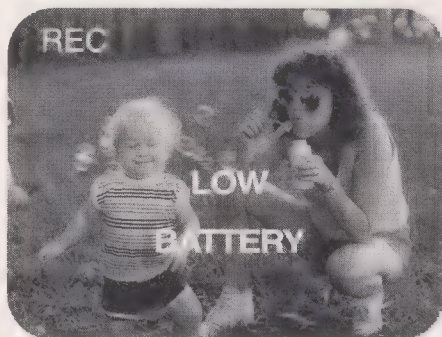
AC-3's fortunes may well be tied in with the eventual arrival of high-definition television, which not coincidentally, the system is compatible with. The Advanced Television Systems Committee has recommended a five-channel audio configuration for HDTV. Some of the HDTV systems proposed actually specify AC-3 for five-channel digital sound, while the Advanced Television Research Consortium (Thomson, Philips, Sarnoff Labs and NBC) uses Musicam.

What does all this mean to consumers? Basically, not to worry. While all-digital surround would definitely be an

improvement over the current state of the art, there's no assurance it will arrive in the two-year window Dolby predicts. Beyond that, there's the issue of software. Laserdiscs, of course, already have digital sound, and any laserdisc player with a digital output could be connected to an AC-3 decoder. But will laserdisc manufacturers produce or distribute a double inventory? And what about videocassettes? Until HDTV VCRs arrive,

there are no decks available in the U.S. that record or play the 16-bit digital audio AC-3 demands.

This means that full digital surround sound is now possible, but not yet practical. If you've been putting off the idea of buying a Pro-Logic setup because of what might come next, rest assured that even though the future of surround sound looks enticing, it won't arrive soon. ■



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**HANDS ON
TEST**

BY GEORGE MANNES

TANDY VIS PLAYER

*Run interactive
CDs on your TV.*

Using Tandy's new Video Information System is like taking an express train that's delayed three hours. It gets you where you want to go. But the snail's pace of travel drains enjoyment from the experience.

The VIS is Tandy's entry into the world of interactive media. Tandy, parent of the Radio Shack chain of stores, is one of many companies that believe the future of interactive audio/video lies on a CD. The problem that manufacturers and users face is figuring out what CD-style standard to use, and on which hardware "platform" CD software should play. Some CD-ROM drives hook up to Macintosh or IBM computers. Others are appendages to video-game systems, like Sega's Genesis.

Tandy's approach is to package its player as a stand-alone device that doubles as a traditional audio CD player, but stays hooked to your TV

you can actually make a selection. Once you start the actual game, it takes 10 seconds for a new screen to come up. Another 13 seconds, and you hear Steve Allen say, "Have fun." Fourteen seconds later, a cursor finally comes onscreen for you to play with.

In all, it takes at least two minutes and 15 seconds after you insert a disc before you can play. Similar delays pop up in the game and in other VIS titles. And none of the discs is actually much fun. If parents hope kids will be captivated by VIS' educational games the way Mikey was by Life cereal, they'd better realize that GameBoy needs swifter competition.

ROM Runner:
The Memorex MD 2500
and a disc that helps
kids pronounce words.



set for video display. This is the same approach used in Commodore's CDTV, Philips' Compact Disc Interactive and the balmy 3DO "interactive multiplayer."

Unfortunately, a couple of weeks spent living with Tandy's debut VIS player, the Memorex MD 2500, suggests it's too clunky and slow to be attractive. Take, for example, the *Meeting of Minds* disc that's a spinoff from the educational pseudo-talk show Steve Allen hosted on public TV. It's one of the roughly 35 discs available for VIS, and one of 10 titles I sampled.

First, load *Meeting of Minds*. Wait 45 seconds for the title screen to come up. Wait at least 35 more seconds before you see the next screen, where you get to make choices about how the game runs. Then wait 20 more seconds before

Navigating through titles with the infrared controller gets mixed results. On one title, *Sherlock Holmes, Consulting Detective, Vol. II*, navigating an onscreen pointer through a directory is nearly impossible when you're sitting on the living room couch. For the pinpoint accuracy needed to make selections, playing the game on a computer and using a mouse resting on a table is more suitable.

Other applications, such as the Compton's *MultiMedia Encyclopedia* that comes packaged with the VIS player, get around the accuracy problem by dropping the cursor. Instead, a highlight jumps from button to button, forcing you to cycle through a sort of electronic maze to push a button in one corner of the screen when you're in another.

Compared to CD-I, its primary competition, the overall quality of the VIS titles is poor. There's no mistaking the

amount of money that went into producing CD-I's guitar tutor, art gallery explorations and the Richard Scarry neighborhood discs. The most successful VIS titles are the simplest. Two discs I sampled—*Kids Can Read* and *Henry & Mudge: In the Sparkle Days*—were storybook discs for young kids. Users can listen to a story read aloud and read the onscreen text, or they can read the text by themselves but get audible assistance in pronouncing any word they don't understand.

One very helpful feature of the VIS player is a Save-It cartridge that lets you preserve a game in progress. I still haven't cracked my first Sherlock Holmes case, and the card gives me a chance to save up my clues from day to day.

Another VIS plus is that it doubles as a CD player. Although the sound is fine, the player has some drawbacks. First, it has no scanning function to let you speed forward or backward through part of a song. Second, in random play mode, the player lags in changing selections: After finishing track 9 on one CD, for example, it played half a second of track 10 before heading off to the randomly selected track 15. Finally, to use

the MD 2500 as a CD player, you have to feed its video to a television. There are no controls or buttons on the player itself, so you have to operate it via the onscreen TV menu.

The VIS player is still a work in progress. It has two slots in the back. A Tandy spokesman says one could be used to upgrade it to a Photo CD player, while the other could hold a modem. It's also possible the player will be upgraded to full-motion video. But priced at \$699 (with Compton's *MultiMedia Encyclopedia*), VIS isn't yet a compelling buy. ■

Hi8 VIEWCAM

continued from page 31

tra careful with the screen—it picks up scratches and fingerprints easily. Sharp provides a special screen-cleaning cloth, which you should use to avoid scratching the screen. Ease of use is very good.

Picture quality is average to good—not really competitive with top Hi8s like Sony's CCD-TR101 and Canon's A1 Digital, but much better than an 8mm machine. Hi8 resolution is only about 370 lines, which is a bit low compared to the

400 lines most other Hi8s produce. The unweighted measurements are slightly below average but the weighted ones are good to very good. The image stabilizer works fine—like most digital stabilizers, it degrades the picture slightly, but its correction appears fairly conservative, and it doesn't drift during pans and tilts.

The camera is rated at 8 lux sensitivity; we measured it at 13.2 lux. The audio frequency response is very limited for a Hi8 camcorder, particularly at low frequencies, and the other audio measurements are lower than average, so audio quality is poor, and overall performance is average to good.

If you're a serious videographer looking for optimal picture quality and the versatility provided by manual controls, the ViewCam's probably not your bag. But if, like most people, you simply want to shoot decent video and have fun doing it, we can think of no better camcorder. We bet you'll find it wonderfully enjoyable to use, and we suspect those who hate camcorders—like technophobes and shy family members—will warm up to the ViewCam. We think it will add to your travels and special events, instead of distracting you from them. ■

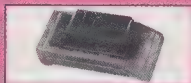


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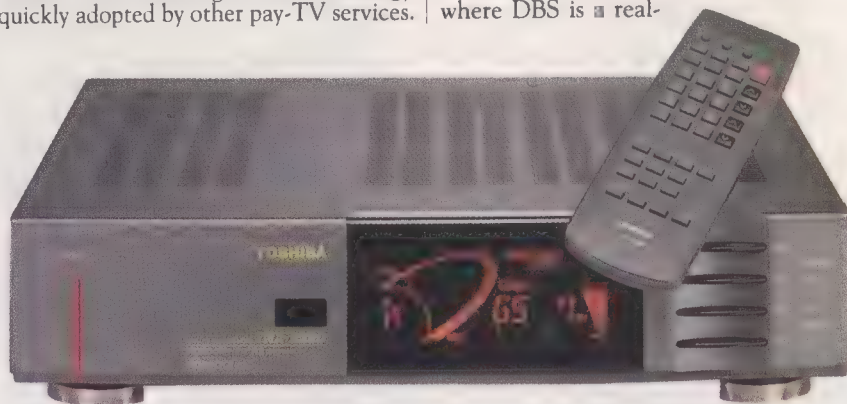
BY GEORGE KOPP

Satellite show news: small-dish fever & VCR Plus receivers

Michael Fuchs is in danger of becoming a TV junkie. So what? Fuchs is the chairman of Home Box Office. He probably should be watching a lot of TV. But it was getting a satellite dish that changed his attitude, not an easy turn-about for the man who was once the Carrie Nation of backyard dishes. It was Fuchs, back in 1986, who directed HBO to scramble its signal to prevent dish owners from watching for free, a strategy quickly adopted by other pay-TV services.

nels of digital TV to anyone with \$699 for a special RCA receiver and an 18-inch dish. Other DBS competitors plan to follow. With so much variety about to become available through a dish you can stick out your window instead of in your lawn, will anyone still want to buy a big-dish C/Ku-band satellite system?

The answer is yes, judging by the vitality of satellite receivers at the show and by the early returns from overseas, where DBS is a real-



Undoing the Dial: Toshiba's TRX2220 receiver lets viewers order pay-per-view shows without phoning.

All of which makes Fuchs' keynote speech at the recent convention of the Satellite Broadcasting and Communication Association in San Diego a milestone. The more so since Fuchs told the assembly he didn't just tolerate satellite TV, he loved it. "Not since I got my junior driver's license did I get that feeling of freedom you get with your first dish," he rhapsodized. "It's like having a car in the sky, and there are no stop signs or traffic lights in the way. You don't even have to yield."

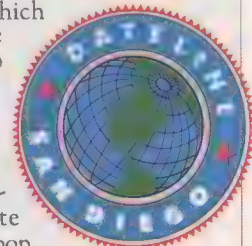
Fuchs was preaching to the converted. They were, after all, the people who make satellite TV systems and supply the programs, along with the dealers who sell the stuff and stick it in the ground for you. But the unspoken question at the three-day technofair was whether Fuchs was also speaking to the condemned.

By this time next year, the country's first direct-broadcast satellite (DBS) service should be a reality. That's DirecTv, from Hughes Communications, which is promising more than 100 chan-

ity. Conventional satellite receivers continue to display new and more numerous convenience features. For example, Uniden, which pioneered the onscreen program guide now present on receivers from many manufacturers, has added a new twist. Want to see what movies are on? Call up "Movies" on the onscreen menu. Or sports, or music, or kidvid.

R.L. Drake has added VCR Plus compatibility to its lineup with three new satellite receivers, the ESR 1624, 1724 and 1824, which range in price from \$1,399 to \$1,879. The flagship 1824 also lets different family members program individual lists of favorite channels, which pop up in separate onscreen windows. All offer onscreen menus in English and Spanish and full-featured remotes.

Toshiba's latest high-end models, the
continued on page 94



Q&A

BY RODERICK WOODCOCK

How to make dissolves and record in S-VHS LP

Q I am interested in using dissolves in my home videos. What do I need to create this effect?

William E. Houghton
Montgomery, Alabama

A Sometimes referred to as a cross-fade, a dissolve is the fade-down of one scene as a new one fades up. For a few seconds, both scenes are visible.

Creating a dissolve usually requires two synchronized video sources. It's easy for professionals to achieve dissolves with switchers, because almost all pro

the next. Sony's CCD-V5000 and Canon's A1 Digital, L1 and UCS3 all have this feature.

Q I just bought my first S-VHS VCR, a Panasonic, and discovered that while it will play tapes made on my older VCR at the LP speed, and will also record in VHS at LP, it won't record in S-VHS at this speed. My dealer says LP is really an obsolete speed and that EP is better than LP now. Is this true?

Arthur Fischer
Riverside, California

A While some VCR makers continue to support all three VHS speeds for both record and playback (Panasonic being the most prominent), they do so only in the standard VHS format. But since VHS inventor and patent-holder JVC has never offered a VCR that records in LP, they also chose not to support the speed when they introduced S-VHS in 1987. From their point of view, SP is the quality speed for both audio and video, while EP is the economy speed where quality is not as good, but acceptable for the majority of users. It's up to the consumer which speed to use.

Despite this, a "quasi-S-VHS LP" speed is obtainable on a few S-VHS VCRs with flying erase heads and audio and video dub. (It works on the Mitsubishi HS-U67, but not on Sony's SLV-R5.) Use an S-VHS tape that has been completely recorded in the VHS LP mode (a black signal is best) on another machine. This gives it an LP control track. Make your S-VHS recording using the audio dub and video dub buttons instead of the record button.

Whether the results obtained are worth the effort is a judgment call, but it's worth experimenting with if you have the gear. And no, there are no plans for adding a real S-VHS LP speed to future decks. ■

Video Magazine welcomes your questions. Please include a phone number, but not a return envelope as the volume of mail does not permit replies. All letters may be edited for clarity and space. Address queries to Q & A, Video Magazine, 460 West 34 Street, New York, NY 10001.



Mix It Up: A dissolve is a fade-out of one scene while another fades in. Here, a Western landscape fades out, while a close-up of a cowboy against a white backdrop fades in. This dissolve was created with two VCRs, each feeding one input of a Panasonic WJ-AVE5 audio/video mixer.

video gear accepts external sync signals. Postproduction houses use a single, master sync generator to ensure that all their video sources are synchronized.

But consumer gear doesn't accept external sync. If you're using two consumer VCRs or camcorders as your sources, you have two choices. You can connect both VCRs to a Panasonic A/V mixer, such as the WJ-AVE5 or WJ-MX12. These use digital delay circuitry to synchronize two incoming video signals, and allow you to perform dissolves, wipes and many other effects. You can also connect each VCR to a timebase corrector, using a Y-connector to feed the output from one into the sync input of another, then feed both outputs into a switcher, like a Video Toaster.

A few camcorders simulate dissolves using digital overlap, which freezes the last frame of a scene and dissolves it into

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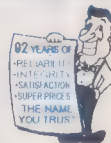
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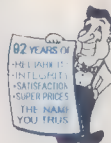
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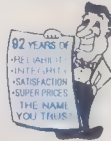
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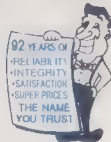
Q. Who is the world's largest camera, electronic and computer department store?



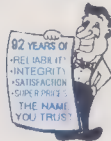
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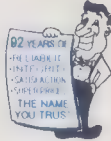
Q. Who has the largest selection of Direct Factory Authorized Brands?



Q. Who can you call for experienced and knowledgeable sales staff?



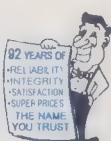
Q. Who guarantees you the lowest purchase price?



Q. Who can you call for prompt and speedy shipment?



Q. Who gives you a 10 day money back guarantee?



Q. They all come and go, but who has been here for 92 years?

ANSWER

TO FIND OUT WHO THIS 92 YEAR OLD RETAIL GIANT IS, TURN TO PAGE 60

BY BRENT BUTTERWORTH

Why WIDESCREEN?



Picture Window: Vertical lines laid on an inset from *Lawrence of Arabia* show how the 16:9 ProScan picture adds image area that would be lost on a 4:3 TV.

Our eyes-on look reveals a movie-like image & new ways to watch TV.

The video industry now lies in a suspended state, awaiting the Federal Communications Commission's decision on an HDTV standard. While Japan and Europe have had widescreen TV and HDTV for years, U.S. videophiles are left to guess when they'll be able to buy real products that incorporate new advanced television technology. But Thomson Consumer Electronics—parent company of RCA and GE—has finally broken the logjam. The company has jumped the gun on advanced television by introducing the first widescreen TV for the U.S. market—and we were the first to get our hands on one.

Upon receiving a preproduction model of the new ProScan PS34190—a widescreen 34-inch direct-view set—we realized it's so different from other TVs that we had to call for help in evaluating it. We solicited the opinions of several *Video Magazine* contributors and outside experts, including our entire editorial staff, contributing editors Frank Beacham, Steve Daly, Bruce Eder and Cliff Roth, and Warren Mann, assistant director of NATM Buying Corp., which negotiates with manufacturers on behalf of several major retail chains. Then we spoke with two Thomson executives, high-end TV product manager Elliot Broadwin and vice president of video programming and software Bruce Babcock, to get their reactions to our panelists' comments.

The PS34190's screen has a 16:9 aspect ratio. This is the ratio of the width of the screen to its height. Compare this to the 4:3 (or 12:9) aspect ratio of conventional sets, and you'll realize that the PS34190 provides a significantly wider picture than we're used to. It's about as high as a 30-inch set, and about as wide as a 40-incher.

Why widescreen? Because it comes a lot closer to the look of a movie screen. Most movies are shot in aspect ratios of 1.85:1 or even wider. Such movies must be cropped from the sides to fit a 4:3 (1.33:1) screen. Alternately, movies can be letterboxed, preserving the original aspect ratio by adding black bars at the top and bottom of the picture. Laserdisc collectors love letterboxing, but the general public doesn't.

For most movies, the 16:9 (1.77:1) screen that will be used on HDTV sets is a much closer fit than a 4:3 screen. A

few years ago, Thomson's marketing research revealed that consumers consider the wide screen a much more noticeable improvement than the higher resolution of HDTV. This research prompted the company to introduce the PS34190. It's an NTSC set that uses digital circuitry

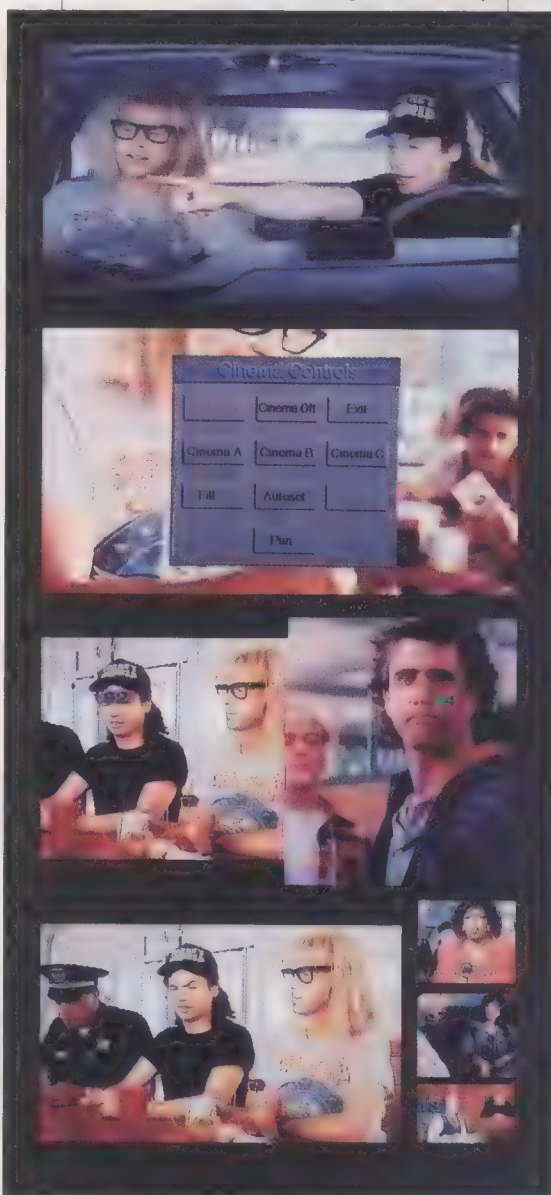
up a menu of five cinema modes: cinema A (1.85:1), cinema B (2.05:1), cinema C (2.35:1), fill (for 16:9 software and camcorders) and autaset, which will allow the set to use codes found in future widescreen software to automatically select the appropriate ratio.

This scheme works perfectly on 1.85:1 movies—the picture fills the screen completely without losing information. On movies with wider aspect ratios, however, you give something up. If you set the screen for cinema A mode, you get black bars at the top and bottom of the picture. They're smaller than the bars you get with a 4:3 TV set, but they're there nonetheless. You can use the cinema B and C modes to fill the screen vertically, but you lose information on the sides of the picture.

On movies with aspect ratios around 2:1, the loss at the sides isn't too noticeable. But with the 2.35:1 ratio common to epics and action movies, you lose a lot. Most widescreen movies are now shot in 1.85:1, but only about half of the letterboxed videos currently available are in 1.85:1. Thus, the usefulness of a 16:9 set will increase as software starts to reflect current Hollywood practice, but right now, you'll find a lot of movies that aren't perfectly suited to the 16:9 ratio.

According to Thomson's Babcock, who spends his time pitching the idea of 16:9 TV to networks and movie producers, many producers—including Disney—now shoot 4:3 programs with a 16:9 safety zone. In other words, most important picture details are kept out of the top and bottom of the screen, so the 4:3 shows look great in cinema A mode.

The cinema menu also offers a pan feature, which lets you shift the image in any direction. In theory, this could allow you to compensate to some degree for the cropping produced by the cinema B and C modes. "This type of adjustability is magnificent. It's long overdue," says Eder. However, the only way to activate the pan is through a large onscreen menu, which remains onscreen as you pan. Thomson's Broadwin says that having dedicated pan buttons on the remote would have made it too crowded, but we feel it would have been worth it. ▶



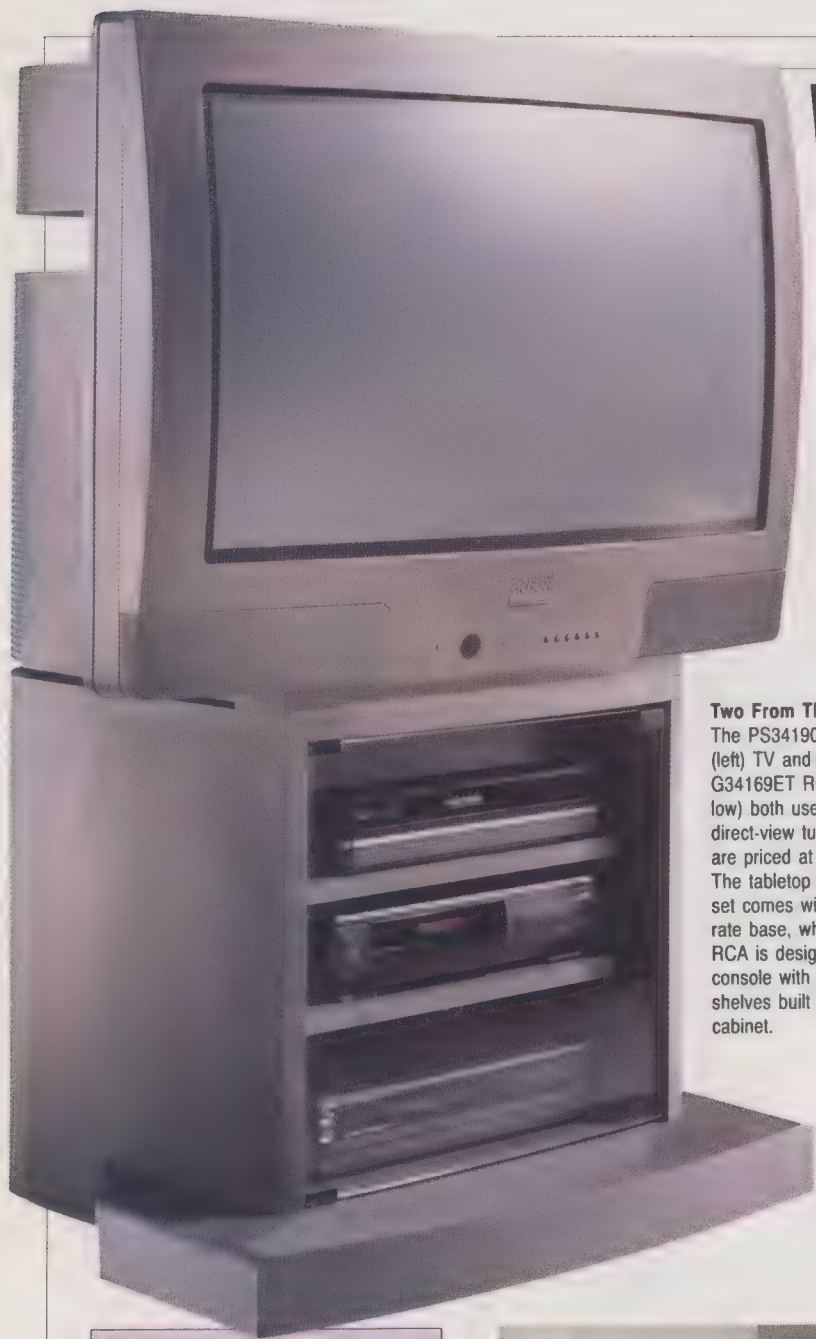
Video à la Mode: The laserdisc version of *Wayne's World* shown on the ProScan TV (top down) in cinema A mode, with the cinema menu activated, sharing a screen with *Lethal Weapon*, and beside three POP screens showing scenes from TV channels.

to get rid of the black bars on letterboxed movies by blowing up the picture until it fills the screen vertically. The company feels this gives consumers most of the advantage of HDTV.

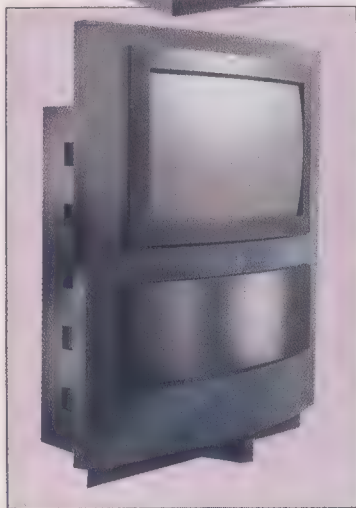
Hitting the cinema button on the

PS34190's remote activates the digital expansion circuitry. Holding it down brings

WIDESCREEN



Two From Thomson: The PS34190 ProScan (left) TV and the G34169ET RCA (below) both use 34-inch direct-view tubes and are priced at \$4,999. The tabletop ProScan set comes with a separate base, while the RCA is designed as a console with component shelves built into the cabinet.



Our panelists longed for more cinema modes to accommodate a wider range of movies. We've seen a prototype of a JVC widescreen set with a fully adjustable aspect ratio, and senior editor Kenneth Korman feels this would be a better approach. "There should be a knob that lets you adjust the ratio," he says. Thomson says it rejected such a feature because many aspect ratios cause severe moire effects.

The good news is that once you get past nitpicking the PS34190's aspect ratios, its effect on 1.85:1 laserdiscs is almost magical. I always felt comfortable with letterboxing, but after spending a few days with the PS34190, I found it frustrating to go back to my Sony 4:3 set. Watching 1.85:1 laserdiscs, I kept wanting to reach for the Sony remote to hit the cinema button, but of course, there wasn't one. Our panelists debated picture quality and features hotly, but all loved the basic idea of a 16:9 TV set—for movies, it's simply more pleasing.

The promise of widescreen was best fulfilled when we tried a 16:9 demonstration laserdisc (specially produced by Thomson) that featured several sports clips. The picture on this disc is squeezed from the sides to fit the 4:3 frame. Using the set's fill mode stretches the picture out, with none of the vertical resolution loss experienced with the other cinema modes. Thus, the picture quality improves substantially.

The widescreen format makes a big difference on almost any sport, as shown by a shot on the disc from behind the plate on a baseball diamond. The camera captures not only the pitcher and the catcher, but first and third bases as well. Most sports action takes place horizontally, and in this case, widescreen works perfectly.

To accurately gauge the set's capabilities, we'd need movie laserdiscs produced the same way as the sports disc. Because letterboxed movies, by definition, suffer a loss of resolution compared to full-



Wide Receivers: Video Magazine's widescreen viewing panel checks out the ProScan in our home theater facility.

Point & Widen:
ProScan's full-feature remote includes buttons for the cinema and special viewing modes.



screen films, only a true 16:9 transfer would make this set sing. Our laserphile panelists—Eder, Daly and Korman—couldn't get too excited about the set without such software. The financial difficulties of introducing a new format may keep this from happening at least until the HDTV era, when we expect some producers to move to a widescreen NTSC format until HDTV production becomes more affordable.

In addition, the advent of direct-broadcast satellite TV should increase the appeal of widescreen NTSC. The DirecTv system soon to come from Thomson and Hughes will broadcast component NTSC—sourced from Sony Digital Betacam VCRs—and DirecTv receivers will be able to pass this clear signal straight to the PS34190's RGB input. The result should be a gorgeous picture. DirecTv will probably broadcast 16:9 programming, too.

New Jack City:
ProScan's RGB input, suitable for component video signals.

When it came to evaluating the picture quality of the PS34190, the debate turned feisty. Much of it centered around the PS34190's integral line doubler, which eliminates scan lines, producing a look that is softer, but arguably more filmlike.

Even our pickiest panelists found the PS34190's picture quite good in cinema A mode. But as you blow up the picture, the quality degrades. (Bear in mind that we were watching a preproduction model.) The distance at which you view the set is critical—too close, and the picture takes on a very soft look. "There's a heringbone pattern in the blacks," observed Beacham, "and the picture has a gauzy look. It's like a broadcast monitor—it reveals the picture flaws that many consumer sets cover up."

The quality of the picture depends greatly on the source. Most discs looked okay in cinema B mode, but never stellar. In cinema C mode, widescreen epics like *Spartacus* were decidedly unpleasant to watch. However, *Terminator 2*, one of

the best-looking laserdiscs ever made, looked okay. Daly feels these ultra-widescreen discs are often overprocessed already. "The more letterboxed the movie is, the more the production house has

continued on page 96

BY MARTIN LEVINE

3 Wides On The Way

Wider Horizons:
Two forthcoming widescreen entries—Philips' 34P560 34-inch direct-view TV (below) and Panasonic's PT-50WFX5 50-inch rear-projection set (bottom).

For a niche product, widescreen TV is drawing not just a crowd of manufacturers, but a crowd of individualists. Thomson is first out of the gate with its ProScan and RCA sets, but JVC, Philips and Panasonic are introducing their own 16:9 TV sets this year and each set will have a distinct identity. The variety illustrates the surprising number of possible uses for widescreen TVs.

More than any of the other new widescreen sets, JVC's entry, due in stores in May, has been designed with home theater in mind, and with impressive results.

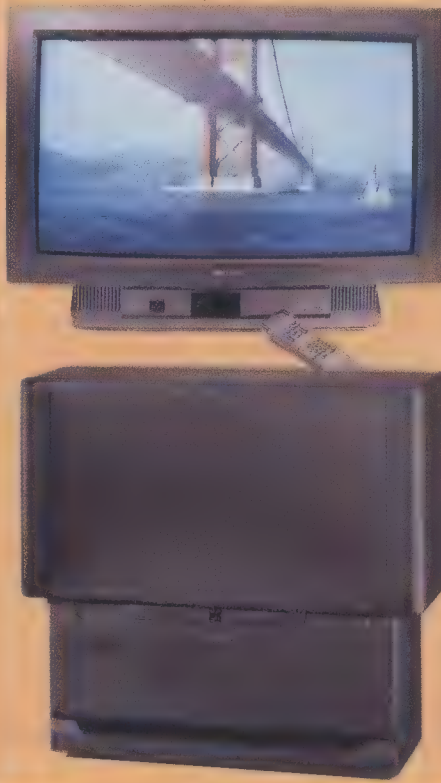
Unlike the Thomson and Philips sets, JVC's NV-55BK4 is a rear-screen projection TV. Priced at \$4,495, its 55-inch size incorporates a 10-watt, five-channel Dolby Pro-Logic surround-sound system along with nine-mode digital signal processing designed to emulate the acoustic characteristics of different listening venues. But what really sets it apart from other projection sets is the combination of a wide aspect ratio with switchable color temperature, in a range from 9,700° Kelvin, the temperature for standard TVs, to 6,500° Kelvin, which JVC calls Theater Status.

Theater Status turns off the black level expansion circuit and reduces the levels of brightness, contrast, chroma and dynamic color enhancement. The result, with a good program source like a laserdisc, is a startling filmlike effect that makes the TV picture look surprisingly like the image displayed in a movie theater.

JVC's set also features one of the more creative ways of expanding a conventional 4:3 image to fill a wide 16:9 screen. It has a Panorama mode that leaves the central 70 percent of an image intact while stretching the 15 percent of the image on each of its two sides. This minimizes horizontal distortion and the need to crop the enlarged image at the top and the bottom.

The idea has piqued the interest of at least one other manufacturer, Philips, which was considering, at presstime, whether

continued on page 76



CABLE SCORECARD

BY GEORGE MANNES

Who won 1992's legislative clash? Here's the good news—and the not-so-good news.

"Last year, viewers ran out of tolerance"



Who really won the great cable battle of 1992? You, the viewers? Or was it the cable operators or their archrivals, network broadcasters, who benefited most from last October's passage of the Cable Act?

The veto-busting congressional clash generated a landmark bill and plenty of promises that it was all done on behalf of the beleaguered cable customer, underserved and overcharged. But now that the dust is settling, how does the scorecard actually read?

It's generally agreed that the Cable Television Consumer Protection and Competition Act of 1992 will prove to be a defining event in the regulation of cable services. It was hailed as a solution

to the problems caused by a 1984 deregulation law that left most cable operators free to charge any price customers would tolerate. And by last year many consumers were fed up, as our own reader polls at *Video Magazine* have shown.

Horror stories abounded. In 1986, for example, Continental Cablevision customers in St. Paul, Minnesota, paid \$5.95 a month for basic 50-channel cable TV service, according to the National Association of Broadcasters. In 1991, they began forking over \$22.40 for the same privilege. In 1986, residents of Chicago Heights, Illinois, paid \$4.95 a month for 54 cable channels. Five years later, they were paying \$20.20 for only 36 channels, a sixfold hike in the cost of each remaining channel.

Last year, viewers ran out of toler-

ance. Anti-cable sentiment ran so high in pre-election Washington that Congress was able to pass the act over President Bush's previously unbeatable veto. It was the first time in four years and 36 showdowns that Bush could not marshal the votes to make his veto stick.

But will the cable bill do the two things viewers most urgently demanded? Will it restrain prices while improving service? Despite the hoopla, the answer is a definite maybe. The bill that beat

Bush's veto is a hodgepodge of measures that attempt to balance the competing interests of viewers, cable operators, broadcasters and program providers. The desire of consumers, for example, to use the advanced features of their TVs and VCRs is set against the right of cable operators to employ anti-theft technologies, like signal scrambling and converter boxes, that may interfere with home video gear.

Much of the Cable Act is pro-consumer, but not all. A significant portion addresses the age-old feud between broadcasters and cablecasters, a fight over money that has little to do with what's best for the viewing public. The provisions involved could well raise prices, reduce choice and complicate service problems.

Moreover, many of the rules needed to enforce the bill are still to be written. Throughout the act, Congress states what it wants: Prices should be reasonable, customer service should be good, TVs and VCRs should be compatible with cable systems. Noble goals. But the bill doesn't specify how to achieve these ends. It just orders the Federal Communications Commission to write the necessary regulations.

The act, in other words, is not a clear-cut consumer victory. It has good news, bad news and fuzzy news—impacts that are still unclear half a year after its passage. And that may stay unclear for some time as the FCC prepares implementation rules and fends off legal challenges to several provisions of

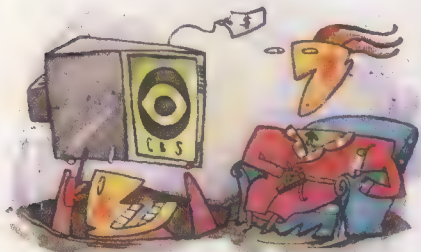


"Rules needed to enforce the bill are still to be written"

the act by companies like Time Warner and Turner Broadcasting.

On the good news side of the ledger, state and local governments will regain the power to oversee cable prices. But don't get too excited. The regulation is aimed primarily at the no-frills level ("tier" in cablespeak) of service to which few customers subscribe. Sometimes known as "lifeline basic," the tier includes the broadcast channels along with a cable system's public-, education- and government-access channels. Lacking cable-only channels like MTV, CNN, Nickelodeon and superstations like WTBS, this service is not what the great majority of customers would call "basic cable."

To clarify these issues, the FCC is setting up a procedure for deciding what constitutes "unreasonable" program prices and service for basic programs, as well as for such other cable offerings as Lifetime, A&E and the Nashville Network. The Cable Act wants the FCC to consider such factors as prices at comparable cable systems, prices previously charged by the system



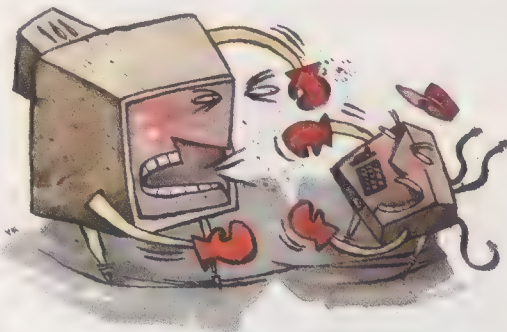
"Cable systems must carry local stations"

under review and the quality of customer service. And it wants the FCC to give subscribers and governmental bodies the opportunity to complain.

There's more good news. As a result of the bill:

- The FCC will have to issue regulations that protect people from being locked into equipment rental agreements with their cable operators. For example, if your system charges a monthly fee for a cable box remote control, the company has to let you know what other remotes, which you can buy on your own, will work with their boxes.

- The FCC also has to promote the availability of converter boxes from dealers not affiliated with cable systems. While good for subscribers, the measure is somewhat troubling to cable equip-



"Compatibility regulations are due next spring"

ment suppliers since, to fight signal piracy, they try to make it impossible for people to get boxes from any source other than their local cable systems.

- Your cable operator can't make you subscribe to a higher or "expanded" basic tier in order to also subscribe to HBO. This will help viewers who only want cable to watch broadcast channels and HBO. However, the provision doesn't apply to cable operators who lack the appropriate technology or those who can demonstrate the rule would force them to raise rates.

- Your cable operator can't charge an "unreasonable" amount for changing the level of service to which you want to subscribe.

- Your cable operator will have to give you a 30-day notice before adding, dropping or repositioning any programs.

- The FCC has set service standards that require cable offices to be conveniently located and open during business hours. Companies must also offer local or toll-free phone lines around the clock, quickly answer calls, install systems within seven days of an order, and respond to problems within 24 hours.

However, most cable companies will have several years to achieve these goals.

A more ominous section of the Cable Act, in terms of its impact on viewers, addresses the issue of whether and in what way cable systems will transmit local TV channels. The bill gives broadcasters a privilege known as "must-carry," which means that cable systems must carry local commercial-TV stations—up to three on a 12-channel or smaller cable system, and up to a third of the channels on larger systems.

On the surface, this too is good for cable watchers. But in a twist on the privilege, the bill gives each local TV station the choice of giving up its must-carry right in favor of negotiating a separate deal with its local cable operator. A popular local station, like WCCO in Minneapolis, could use this rule to extract from a cable system a payment for each viewer WCCO reaches through cable, just as cable programmers receive fees from cable systems.

This raises the possibility of two viewer-unfriendly scenarios. First, cable operators may start paying—and passing the extra costs along to you, their customers. Second, cable systems might drop the TV stations from their lineups, rather than pay one penny to carry channels they've carried free for years. If this happens, you may not be able to watch your local ABC affiliate.

It's also possible these provisions will never be enacted. The cable industry is vigorously attacking the must-carry and retransmission measures in court, and just might win.

THE COMPATIBILITY ISSUE

One of the biggest gripes videophiles express about cable is its incompatibility with popular video products. People who own TV sets with picture-in-picture features, for example, may find they can't use the features because

their cable system scrambles channels and requires a converter box. The Cable Act tries to solve this problem, thanks to an effort spearheaded by Vermont Senator Patrick Leahy, who got fed up with the incompatibility of his

"Support for new video technologies"



CABLE



own cable-connected VCR.

The act requires the FCC to consult with the cable industry, video manufacturers and the public, then report later this year on "means of assuring compatibility" between TVs, VCRs and cable systems. Final compatibility regulations are due next spring. The new rules may well impose hardware or system requirements on cable operators and TV makers.

In return, viewers should be able to do such things as watch a program on one channel while taping another, tape two consecutive programs with each running on a different channel, and use

advanced features like PIP. The goal is to let cable subscribers "enjoy the full benefit of...the functions available" on their TVs and VCRs.

On the other hand, cable operators may receive some form of regulatory help in protecting their programs against theft or unauthorized reception. The bill orders the FCC to consider the cable operators' need to do this.

Here's another possible problem. The Cable Act gives broadcast stations the right to decide, within limits, the channel numbers that cable operators will use for their programs. This means ABC, for example, could veto a move to assign *Roseanne* an unfamiliar, hard-to-remember dial number. But the state of today's cable scrambling technology makes it likely that this will leave viewers with a less friendly cable/TV/VCR interface. It won't be easy for the FCC to come up with rules that satisfy both subscribers and cable systems.

Perhaps the most encouraging aspect of the Cable Act is its support for new video technologies. The law says all program distributors shall have equal access to cable and satellite services. One



of the toughest hurdles to launching a new medium—be it a wireless cable system or a home satellite network—has been the ability to offer viewers the same programs as those on conventional cable, at comparable prices.

As a result of the act, companies like Viacom, which owns local cable systems as well as such nationwide programming services as MTV and Nickelodeon, cannot, in theory, discriminate in setting prices for the programs it sells to other distributors. Even if a distributor is competing directly against a Viacom-owned cable system, Viacom can't ask an unreasonable price for a program service.

The most visible beneficiary of this provision should be the DirecTV project by Hughes Communications, which is planned for launch early next year. DirecTV plans to compete with cable by beaming cable-type programs by satellite to small rooftop or backyard dishes. The Cable Act's measure could make DirecTV look more attractive to viewers seeking an alternative to cable.

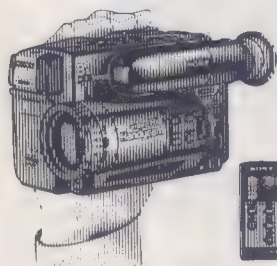
However, the cable industry is challenging many interpretations in the equal-access portion of the bill. Discovery Communications, which is partly owned by Tele-Communications Inc., the nation's largest cable operator, and Time Warner, which owns HBO and the nation's second-largest cable system, are both suing to overturn the section. Meanwhile, six months after the bill's passage, DirecTV has only announced programming deals with Paramount Communications and the Disney Channel, leaving it still on the programming fringe.

Finally, the 1992 act gives local systems the muscle to clean up public-access cable by banning from public-access channels shows that are obscene or sexually explicit, along with programs that solicit unlawful conduct. Leased-access channels can be cleansed of "indecent" programs. For better or worse, this could mean that late-night channels in big cities, which carry such fringe classics as *Midnight Blue* and *The Robin Byrd Show*, may become a lot less interesting for out-of-town visitors.

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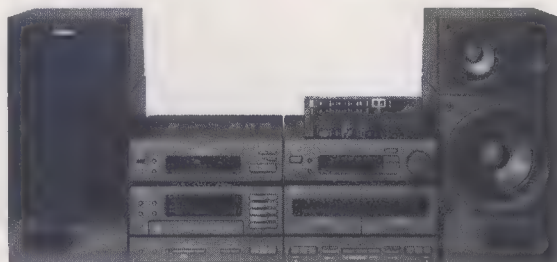
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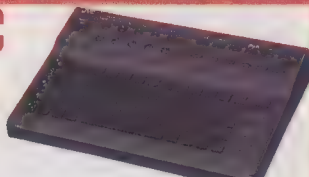
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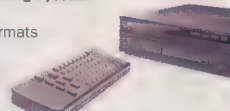
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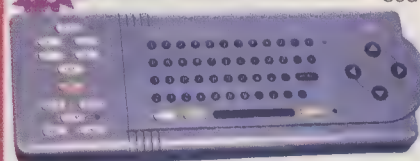


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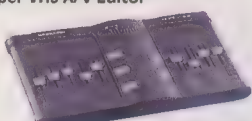
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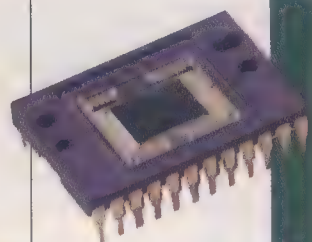
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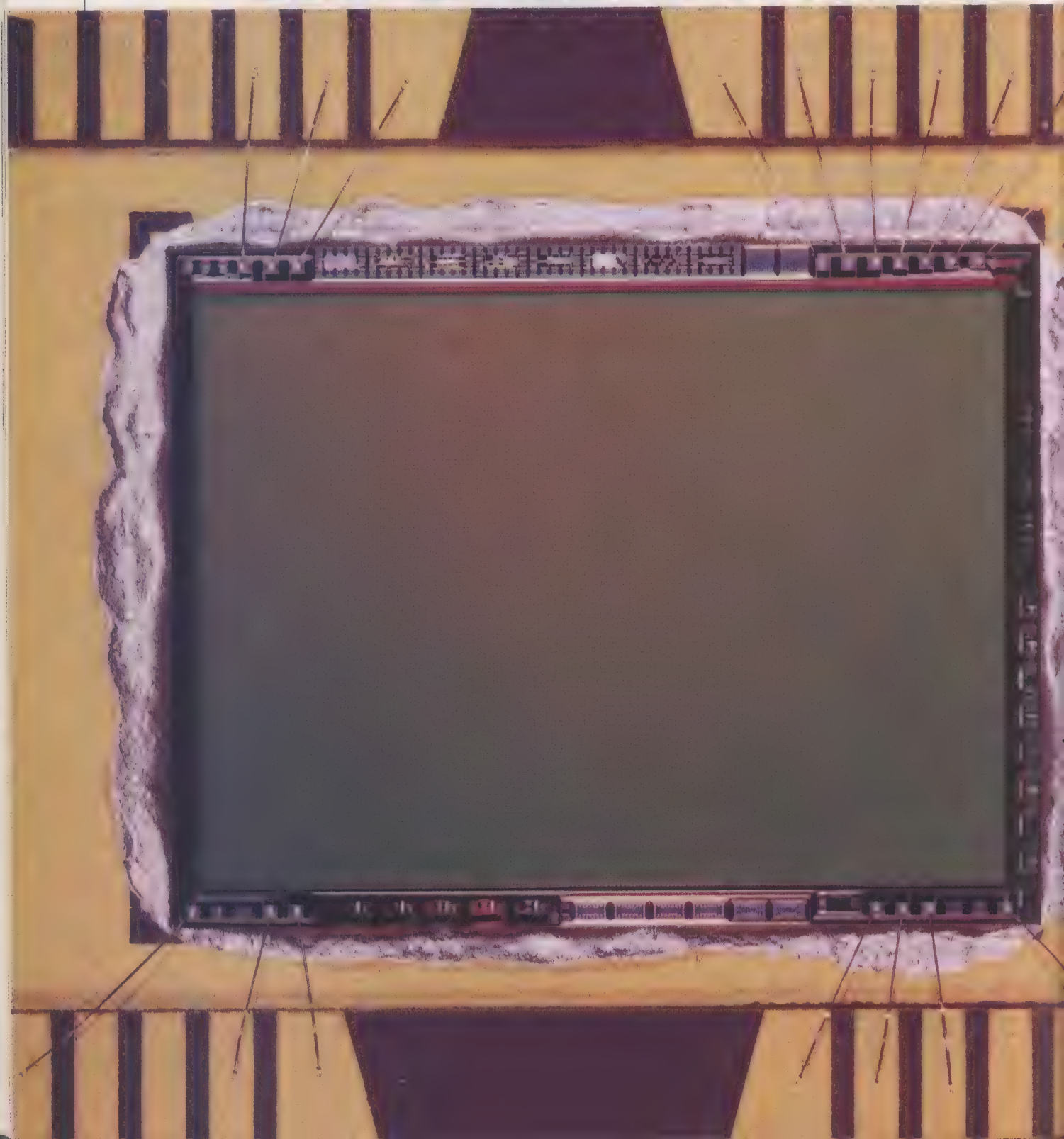
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IN THE REALM



OF THE SENSORS

From sensitivity to shift registers, we teach the ABCs of camcorder CCDs.

Used to be, you could spot a home videographer at 50 yards. Remember the dad desperately trying to catch up to his family at the amusement park while hauling 20 pounds of gear, and the mom nearly collapsing under the weight of a gargantuan tube video camera? No one would even consider hauling around one of the old two-piece video camera/recorder rigs nowadays—almost everyone has switched to a compact 8mm or VHS-C camcorder. But few home videographers realize what makes today's camcorders so compact and functional.

There's plenty of credit to go around—smaller tape formats and advances in manufacturing have certainly helped shrink the camcorder. Most of the credit, though, has to go to the development of the CCD image sensor, the device that converts light entering a camcorder's lens into an electrical signal. Easily the single most expensive part in a camcorder, it is responsible for the modern camcorder's relatively low cost, ruggedness and ease of use, and for many of its useful operating features. No mean feat for a small chip of silicon.

What you rarely see in ads and spec sheets—aside from relatively useless information about the number of pixels a CCD has, or its lux rating—are details about how a CCD image sensor works, how its design can influence picture quality, and how or where CCD-related problems arise. In this article, we'll explain the basics of the CCD and the

variables that affect its performance, and we'll tell you how to evaluate CCD performance when you shop for a camcorder (see "Testing CCDs Yourself").

WHAT IS A CCD?

A CCD is a type of integrated circuit. Like a transistor or a diode, it's considered a semiconductor device. Semiconductors, like silicon and germanium, conduct electricity only when they receive an outside stimulus, such as more electricity.

All semiconductor devices are to some extent light-sensitive. That's why most are packaged in opaque materials—so light won't affect their behavior. Light falling on a semiconductor frees electrons in the semiconductor atoms from their standard orbits. A CCD capitalizes on this photoelectric effect.

The full name of a CCD is Interline-Transfer Charge-Coupled Device, or IT CCD. A CCD consists of a rectangular array of hundreds of thousands of light-sensitive photodiodes. Light from the camcorder lens is focused onto the photodiodes, which are called picture elements or pixels. The electrons (or "charges") freed by the light accumulate in the photodiodes and are periodically dumped into the vertical shift registers that sweep them out to be amplified. (The shift registers are the actual charge-coupled devices.) The shutter speed of a camcorder controls how long the charges are allowed to accumulate before they are transferred out.

You might see some camcorder sensors referred to as MOS (metal-oxide semiconductor) instead of CCD, but don't be concerned—in this case, there's no real difference.

MOS is only a way to make semiconductors. All video CCDs are made using MOS technology. But many other types of chips also use this technology, so if

you see a MOS chip, it may or may not be a CCD.

CCD ADVANTAGES

In general, CCDs vastly outperform the tube-type sensors they replaced. The big improvements are in sensitivity, ruggedness and cost.

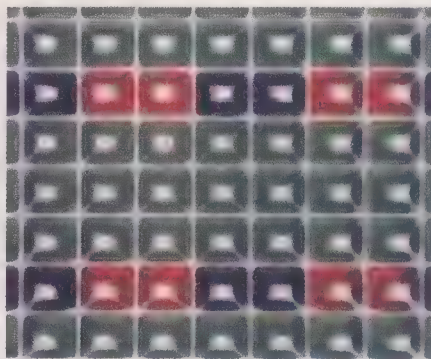
CCDs can be made more light-sensitive than film, and manufacturers are continually trying to improve their sensitivity specs. With most consumer camcorders, you can get a passable picture without using a video light.

CCDs are solid-state, so they have no moving parts and need no adjustment. Unlike tubes, they'll take a beating and still perform perfectly. Also, they exhibit minimal lag—the bright trails behind highlights that you see in pictures shot with tube cameras.

Even at \$100 apiece, CCDs are relatively inexpensive compared to other types of sensors. While they're made using standard integrated-circuit manufacturing techniques, the cost is higher than that of many other types of chips because of the CCD's comparatively large size. This increases the number of defective CCDs, thus decreasing production yield and placing a greater demand (and cost) on quality control.

Despite its importance to the performance and price of a camcorder, the CCD is only one link in a chain that includes optics, post-

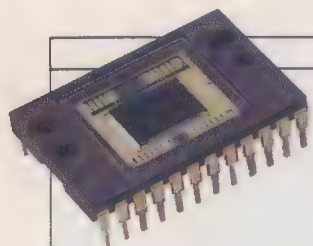
CCD processing electronics and a videotape recorder. Unless you intend to use a camcorder only as a closed-circuit monitor camera, you should evaluate any camcorder you plan to buy as a whole and not fixate on the CCD. Camcorder manufacturers, on the other hand, tend to focus in their ads and data



Focus on Filters: Microscopic view showing a CCD's tiny red, green and blue color filters. Each filter covers one pixel of a CCD.

sheets on specific aspects of CCD technology that they think are important. Let's examine these CCD traits, to see which are actually important and which

CCD Close-Ups: A magnified view of a CCD showing how the actual sensor (the green rectangle in the center of the picture) connects to its case, and a life-size look at the entire chip (top left).



SENSORS

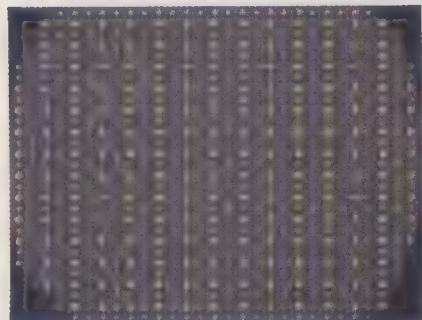
are characteristics that you can ignore.

One-chip color. A plain-vanilla CCD is sensitive to the entire visible spectrum (and even to near-infrared, as can be seen by firing an infrared remote into a camcorder). Professional cameras use three CCDs, each with a red, green or blue primary-color filter. Nearly all consumer camcorders use only one CCD, from which full-color reproduction must be obtained.

The surface of the CCD in a single-chip camcorder is covered with a color-filter array (CFA). The light falling on each pixel must first pass through a primary-color filter, the color of which depends on the pixel. Consumer camcorders typically use the complementary-primary color set of cyan, yellow and magenta plus green. Electronic manipulation of the CCD output transforms this color coding into RGB.

Use of complementary colors in single-CCD camcorders makes perfect color reproduction impossible, but a complementary filter lets far more light actually hit the CCD, thus increasing sensitivity. This is one reason why professional camcorders, some of which use the same CCDs as consumer camcorders, have better color reproduction but poorer light sensitivity. Some new consumer camcorders, like Sony's Hi8 CCD-VX3, use multiple CCDs to obtain superior color quality.

Sensor size. Just a few years ago, the standard size for a camcorder CCD was 1/2-inch. Now the standard is swinging to 1/3-inch. Neither of these dimensions is a direct measure of the size of the ac-



Pixel Power: Close-up of 1/3-inch, 270,000 pixel CCD shows the pattern of the color filters.

Testing CCDs Yourself

It's usually difficult for consumers to conduct meaningful comparisons of video products, but CCDs are a welcome exception. As long as the camcorders you're trying are plugged into the same monitor (or, at the least, a couple of monitors adjusted to match as closely as possible), you can perform several simple tests that tell you much about a CCD.

One of the best ways to generate a test signal for evaluating low-light performance and noise is to use a capped lens. Simply put the cap on and look at the camera output on a monitor. Ideally, you'll see an absolutely black screen. But if you turn up the brightness and the contrast on the monitor, every camcorder will



Sensors in Bloom: This shot taken with a Canon L1 shows blooming, the vertical artificial highlights emanating from the projector's lenses, which are too bright for the CCD to handle.

produce a grainy noise signal. This is the combined noise from the CCD's dark current and video signal-processing stages. You might even be able to discern an unmoving pattern behind the randomly varying snow of the noise. This is, of course, fixed-pattern noise. A third type of problem you might see are small, stationary, white or black dots that indicate "dead" pixels.

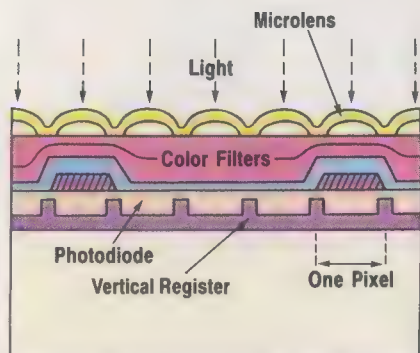
This test is a great equalizer, because it eliminates differences in automatic exposure control systems. With the lens capped, the camcorder should automatically go to the widest aperture and 1/60-second shutter speed. If not, make those settings manually. If the camcorder has automatic gain control, it too can usually be defeated, but for a realistic test you may want to keep it on. And since dark current noise increases rapidly with temperature, warm up and test the camcorders in the same ambient temperature.

This may seem unrealistic—after all, who shoots with the lens cap on? But any fixed patterns or dead pixels you see in the capped-lens test will also be visibly superimposed on the image in a low-light scene. I've also found that the quality of the capped-lens noise (its graininess and color content) is an excellent indicator of the graininess of low-light shooting.

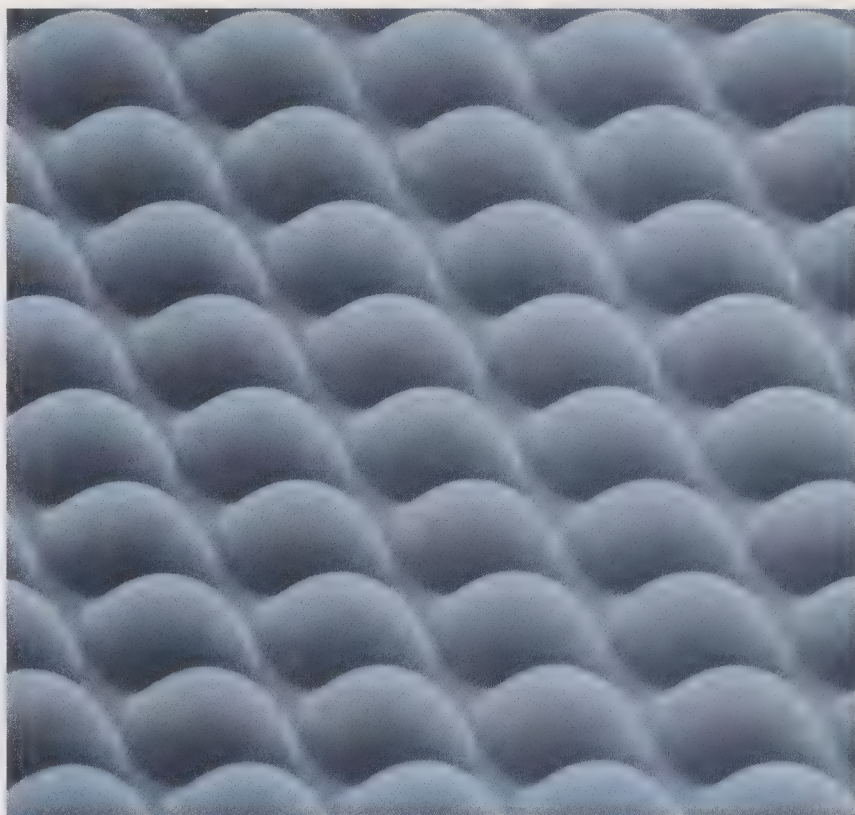
Once you uncapped the lens, it becomes much more difficult to test CCD performance, especially if the camcorder offers no manual adjustments. Smearing and blooming are both influenced by aperture and shutter-speed settings, as well as by the amount of amplification applied to the CCD output.

Aside from shining a flashlight directly into the lens from about 10 feet, it is difficult to find a suitable smear/bloom test in a store unless there are some Christmas lights set up. You might try shortening the shutter speeds of the camcorders in your test to increase the apparent smearing and blooming, but this is a bit unrealistic. If you do want to compare smear/bloom performance, be sure that all camcorders are pointed at the same test scene, preferably one of moderate to low overall brightness with at least one very bright highlight.

—DR



Little Lenses: Cross-section of a CCD showing the arrangement of microlenses and color filters used to focus and filter light entering a sensor. The electron-microscope photo at right shows a sheet of microlenses.



tive area of the CCD. The dimensions actually refer to the outer diameter of an old-style image-pickup tube. The convention of measuring CCD active areas by equating them to the active areas of image tubes has survived, even though the use of image tubes in camcorders has not. The true active area of a 1/2-inch CCD measures only about 5/16-inch diagonally, and that of a 1/3-inch CCD measures only about 1/4-inch.

Sensor size has little to do directly with actual picture performance in a camcorder. Sensor size has its greatest effect on size, weight and cost. The smaller the CCD, the smaller—and cheaper and lighter—the lens assembly needs to be to obtain the same effective zoom range. Looked at another way, if the lens assembly remains the same and only the CCD shrinks, the effective focal length of the camcorder lens increases.

Pixel count. Beyond a certain number, depending on whether the tape format is high-band (S-VHS, Hi8) or not, the number of pixels on a camcorder CCD is irrelevant. In fact, to prevent moiré (rainbow) patterns on striped shirts and similar phenomena, some camcorders have a resolution-reducing filter in their optical paths. So unless you are going to tape your camcorder output on a professional video recorder, what really

matters is the resolution obtained off the tape—which is usually limited by the tape medium, not the number of pixels in the CCD. This is why you see in camcorder test reports almost equivalent (within 10 to 20 lines) record/playback horizontal luminance resolution for every camcorder of a given tape format.

Sensitivity. It has become a painful truism in video that no consumer should believe any manufacturer's specifications for camcorder sensitivity—the over-

touted lux rating. The main reason for this unfortunate state of affairs is the lack of a standard method to measure this parameter. While a manufacturer *might* be trusted to rate all of its cameras using the same tests, there is absolutely no way to compare these ratings with those from another manufacturer—ratings, in all likelihood, obtained by a completely different test procedure. It's apples vs. oranges all the way.

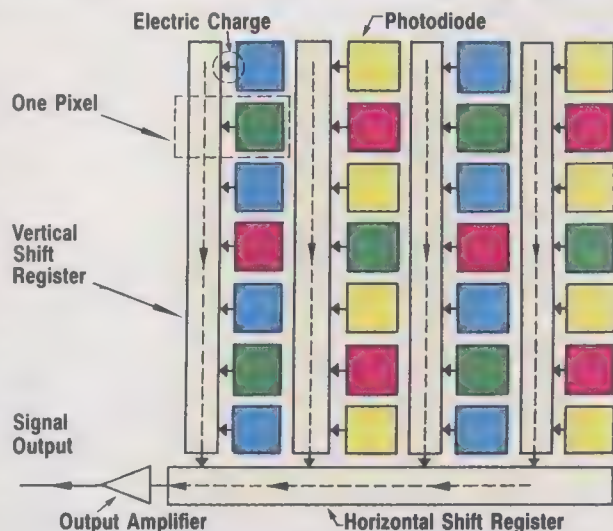
This non-standardization extends all the way back to the CCD imagers themselves. Chip manufacturers have no standard way of specifying CCDs, either. For example, the engineering data sheet for Sony's ICX038AK 1/2-inch CCD chip lists its sensitivity as two millivolts output under a specific illumination. Kodak, for its video-oriented CCDs, prefers to state sensitivity in terms of "green responsivity" as measured in volts/microjoule/square-centimeter under completely different lighting.

You can, however, make useful comparisons by referring to the charts in *Video Magazine's* "Videotests." We always measure the amount of light it takes for a camcorder to produce 50 IRE units when shooting a gray-scale chart. Our measurements are not directly comparable to those from manufacturers or other magazines, but they're consistent from test to test.

There are efforts now under way to standardize camcorder sensitivity specs.

continued on page 72

Electronic Escape Route: In a CCD, charges travel from photodiodes down the vertical shift registers and out through the horizontal shift register.



TAPES & DISCS

N E W R E L E A S E S



Bad Guys, Skinny Ties: *Reservoir Dogs*' band of hardened criminals lights up the small screen.

FEATURE FILMS

Reservoir Dogs

1992. Harvey Keitel, Tim Roth, Michael Madsen; dir. Quentin Tarantino. Hi-fi stereo. (R) 100 min. \$92.98. LD letterboxed \$34.95. LIVE.

There are six of them, all professionals, assembled for a big jewel robbery. They don't know each other, and to keep it that way they're assigned fake names: Mr. Blond, Mr. White, Mr. Orange, Mr. Blue, Mr. Brown and Mr. Pink.

It's a well-planned caper, but it goes bad. The cops show up, civilians are killed, everyone scatters. One by one they reassemble at their hideout and try to piece the fiasco together: Who got away and who got wasted? Where's the loot? And who ratted them out?

That's only the beginning of the deliriously enjoyable pulp thriller *Reservoir Dogs*, a movie Jim Thompson would be proud to call his own. The less said about the plot the better: Even the most jaded crime buffs will be kept on edge, as much by writer-director Quentin Tarantino's Godardian structure as by the sto-

ry itself. And if that sounds intimidating, rest assured that Tarantino's most Godardian quality is his love of junk culture—you just know they're going to love this one at the Seventies Preservation Society.

Even more than *Glengarry Glen Ross*, *Reservoir Dogs* is a sterling example of that oft-misused term "ensemble cast." An actor himself (he has a small but key part in the film), Tarantino writes terrific dialog, and in Harvey Keitel, Tim Roth, Steve Buscemi, Michael Madsen, Chris Penn and Lawrence Tierney, he has a cast that relishes it. Sensitive viewers must be warned, however, that the levels of both profanity and violence are

extremely high.

In naming it Best First Feature, an international panel of critics at the Toronto Festival of Festivals aptly called *Reservoir Dogs* "a spectacular debut that combines a brilliant narrative sense, an expressive use of space and an insightful direction of actors." Inventive, hilarious, scary, bawdy, suspenseful, tuneful and gruesome, it's as intense as a gallon of espresso.

—M. Faust

Under Siege

1992. Steven Seagal, Tommy Lee Jones, Gary Busey; dir. Andrew Davis. Hi-fi surround, cc. (R) 100 min. \$94.99. LD letterboxed \$29.98. Warner.

Passenger 57

1992. Wesley Snipes, Bruce Payne; dir. Kevin Hooks. Hi-fi surround, cc. (R) 84 min. \$94.99. LD letterboxed \$29.98.

Two large moving conveyances, two sets of nasty professional hijackers, and on each a single hero with a haunted past as the victims' last hope. There's not much suspense in either of these action epics, but in the first one, at least, it scarcely matters.

Plainly and simply, *Under Siege* is a blast. This epic, about the hijacking of a nuke-equipped destroyer by a team of mercenaries led by Tommy Lee Jones and Gary Busey, actually comes close to the *Die Hard* level. Steven Seagal, the master of low-budget martial-arts surli-



Die Harder: Wesley Snipes does his best Bruce Willis imitation in *Passenger 57*.

ness, moves successfully into the high-rent district with first-rate production values, two of the best bad-guy players alive and a real screenplay in which the gag lines work (Jones and Busey really take them over the top). The direction is slam-bang with no dead spots, even in the setup scenes which are so often dull in this type of film.

Passenger 57 is a more obvious, and less successful, *Die Hard* imitation. Wesley Snipes is in good wisecracking form as the anti-terror expert who just happens to be on a plane when it's sky-jacked by your basic gang of psycho terrorists. The supporting cast and direction are decent but the script is both routine and disjointed, with something of a sadistic streak.

The tape transfers are as good as they need to be. Letterboxed discs are on the way.

—Sol Louis Siegel



Sister Act: *Gas Food Lodging*'s Ione Skye and Fairuza Balk are lookin' for love in all the wrong places.

Gas Food Lodging

1992. Brooke Adams, Ione Skye; wr./dir. Allison Anders. Hi-fi surround. (R) 101 min. priced for rental. LD letterboxed \$34.95. Columbia TriStar.

At first glance, *Gas Food Lodging* promises nothing special. The story of weary single mother Nora Evans (Brooke Adams) and her restless teenage girls, this low-key tale recycles familiar characters and situations. But writer-director Allison Anders and her fine cast turn standard melodrama into a striking portrait of hearts in flux, tempering potential clichés with whimsy, gentle insights and even a hint of cosmic transcendence.

The Evans household is ready to blow: While Mom works her fingers to the bone in a small-town New Mexico truckstop, 17-year-old Trudi (Ione Skye) sleeps with any guy who's available, and little sis' Shade (Fairuza Balk) spends afternoons at the movies watching corny Mexican romances. All three want love but don't know where to find it. And when Trudi gets pregnant, they're forced to face hard truths.

Adams strikes a compelling balance between anger and resignation as the lonely Nora, struggling to control her daughters. Playing the prematurely embittered Trudi, Skye avoids grand gestures, revealing intense longing in moments of quiet desperation. The charming Balk, meanwhile, nearly steals the show as Shade, who clings to innocence while pondering adult dilemmas. Although *Gas Food Lodging* may be a "small" film, its resonance is as big as life.

—Jon Young

Husbands and Wives

1992. Woody Allen, Mia Farrow, Judy Davis; wr./dir. Allen. Hi-fi surround, cc. (R) 108 min. priced for rental. LD letterboxed \$34.95. Columbia TriStar.

Since the tabloid Woody Allen has eclipsed the cinematic Woody Allen, it's impossible to view *Husbands and Wives* objectively. Whatever your response to the headlines, however, this grim saga of marital misery deserves to be taken seriously: Rather than attempt to entertain, Allen has crafted a frankly confessional work that lays out his wretched psyche in full view. As a movie, it's erratic and often slapdash; as a spectacle, it's gripping, unpleasant stuff.

The slight plot revolves around two married couples going through wrenching changes. Gabe (Allen) and Judy (Mia Farrow)



EDITOR'S CHOICE



kenneth korman

This era's essential innovation in video software is the special-edition laserdisc, embodied by its careful film-to-tape transfers, running commentary from filmmakers on separate audio tracks and interactive CAV supplements. Until recently, though, these projects have largely remained the province of the much-revered Criterion Collection. Now other companies are mastering the delicate art of the special-edition disc. Pioneer Special Editions' new **Rambling Rose** boxed set (\$69.95) is as elegant a production as I've seen this year.



Rambling Rose

An involving character study with warmth and resonance beyond its simple plotline, *Rambling Rose* is the kind of film Hollywood used to deliver consistently but seldom attempts in the new era of go-for-broke blockbusters. Brilliant performances by Robert Duvall, Diane Ladd and Laura Dern are the film's greatest pleasure, and the disc's 12 minutes of deleted scenes—as well as an alternate ending—generously offer more of their subtle and moving work.

Pioneer has also hit the bull's-eye with Paramount's **The Godfather Trilogy** (\$199.95), a seven-disc set that places all the footage from the three films, plus scenes originally added for the *Godfather Saga* TV presentation, in chronological order. (A telling documentary, *The Godfather: A Look Inside*, is also included.) Packaged in a beautiful gatefold box, the *Trilogy* adds matrixed surround sound and chapter encoding to Parts I and II for the very first time, and a new transfer for this material yields improved sharpness and color. The first 10,000 copies are numbered and bear the printed signature of director Francis Ford Coppola, but Pioneer has wisely opted to offer the set indefinitely, and will re-press as needed. No laser library will be complete without it.

are stunned one evening to discover that Jack (Sydney Pollack) and Sally (Judy Davis) are splitting up. As their friends begin a bitter separation, Gabe and Judy examine the precarious state of their own union, which is threatened by a disagreement over having children.

Striving for a stark verité effect, Allen employs nervous handheld cameras, a disjointed narrative and surprisingly banal dialog to mimic a documentary. Though these stylistic affectations are more distracting than persuasive, there's no mistaking his bleak outlook: Gabe and Judy are overwhelmed by the daily demands of marriage, condemned to a joyless treadmill. One could write volumes about Allen's open hostility to women, or comment at length on the way Gabe resists the temptations of a vibrant younger woman (Juliette Lewis) — in contrast to the artist himself. Suffice it to say that *Husbands and Wives* is fascinating, muddled and unforgettably sad.

—JY

Bob Roberts

1992. Tim Robbins, Alan Rickman; dir. Robbins. Hi-fi stereo. (R) 102 min. \$94.98. LD \$34.95. LIVE.

Had Oliver Stone been inspired by *This Is Spinal Tap*, he might well have made the mock documentary *Bob Roberts*. Instead, this barbed satire on American politics marks the impressive directorial debut of actor Tim Robbins.

Robbins also stars in the title role of a guitar-strumming candidate for the United States Senate. Moving from Wall Street to the pop charts, Roberts is an anti-Bob Dylan cloaked in the flag, whose songs champion greed and bigotry while condemning the have-nots. Yuppie audiences cheer this self-styled "conservative rebel" as he picks and grins his way through lyrics like, "Be a clean livin' man with a rope in your hand...string 'em up without a trace of sympathy."

Although Robbins hits a lot of political targets, the film's real targets are the subservient news media that thrive on soundbites and buzz words, covering their laziness with a mantle of "objectivity." Some of the movie's funniest bits are provided by a parade of stars (including Susan Sarandon, Helen Hunt, James Spader and Fred Ward) in cameos as TV newscasters. Equally memorable are radical journalist Giancarlo Esposito, slimy aide Alan Rickman, liberal adver-

Rebel Without a Clue
Director/star Tim Robbins
stages his case
in *Bob Roberts*.



sary Gore Vidal (who wrote his own dialog) and John Cusack (in a deft lampoon of TV's *Saturday Night Live*). Like *All the King's Men* and *The Candidate*, *Bob Roberts* is a film that deserves to be revived prior to every American election.

—MF

Simple Men

1992. Robert Burke, Martin Donovan; dir. Hal Hartley. Hi-fi stereo. (R) 105 min. priced for rental. New Line.

Surviving Desire

1991. Martin Donovan, Mary Ward; dir. Hal Hartley. Hi-fi mono. (NR) 86 min. \$89.95. Fox Lorber.

Like that of Bill Forsyth or Jim Jarmusch, Hal Hartley's quirky humor is impossible to explain. He explores his perennial subject (described with tongue in cheek as "the mechanics of emotional capitalism") with the most wonderfully droll dialog in American movies today. His regular players speak in a terse, deadpan style that brings to mind Howard Hawks, David Mamet, and Abbott and Costello. Obsessively structured (which can be a great source of humor), his films serve as frameworks in which he can bounce characters with different perspectives off each other, just to see what happens.

Hartley calls *Simple Men*, his most recent film, "a romance with an attitude problem." It would take too long to describe the shaggy-dog plot, which is, after all, only an excuse for the characters to talk. And Hartley's dialog is at its sharpest here, particularly in the laugh-out-loud first half. But *Simple Men* is also his most accomplished film, with a grace of design and structure that stays with you long afterward.

Made for PBS's *American Playhouse*, *Surviving Desire* takes the element of talkiness to an extreme: A literature professor, so obsessed with a passage from *The Brothers Karamazov* that he devotes every class to discussing it, has an affair with a student who is only after background for a novel she wants to write. The tape also features two witty short films, *Theory of Achievement* and *Ambition* (Hartley's personal favorite).

—MF

Guncrazy

1992. Drew Barrymore, James LeGros, Lone Skye; dir. Tamra Davis. Hi-fi stereo. (R) 97 min. \$89.95. Academy.

Poor Anita. She wants to please the boys in her two-bit town, only to end up known as the school tramp. At home in her grubby little trailer, Anita tries to fend off her mom's sleazy boyfriend, to no avail. What's a girl to do?

Miraculously, Anita finds a pen pal

Two for the Road: *Guncrazy*'s LeGros, Barrymore.





Candid Camera:
Ross Perot yuks it up
in a prebroadcast satellite *Feed*.
—SLS

who's as starved for affection as she is. Unfortunately, mild-mannered Howard is also a convict with a gun fetish, and when this troubled loner gets out of jail he makes a beeline straight for his dream girl. Starring Drew Barrymore and James LeGros as the ill-fated sweethearts, *Guncrazy* charts their inevitable descent into damnation with sympathy and intelligence, emphasizing character over mindless violence. Like a B-movie from bygone days, this simple thriller (first seen on cable) doesn't waste a frame on peripherals, generating a smoldering intensity that more expensive films rarely achieve.

Memorable scenes abound, from the sermon of the unstable snake-handler (Billy Drago) who gives Howard a job to Anita's failed attempt to rob a blue-collar bar. Above all, *Guncrazy* draws its power from the rapport between the outcast, somewhat dim lovers, who treat each other with genuine kindness and respect, but can't come to grips with reality. —JY

Feed

1992. Dirs. Kevin Rafferty, James Ridgway. Hi-fi mono. (NR) 80 min. \$59.95. First Run.

Its title sounds like a hungry-creature-from-hell horror film, but *Feed* is actually a political documentary named for the satellite "feeds" that supply TV news programs. The film follows the 1992 presidential candidates before the New Hampshire primary as they primp for the cameras to send a clear image, if not a clear message, to voters.

Nebraska Senator Bob Kerrey, with a faulty mic, tries in vain to talk to a news anchor he cannot hear. Jerry Brown appears a sour man worrying over the knot in his tie. George Bush, meanwhile, pops up periodically as an aging suit behind a desk, listlessly waiting for his cue to speak. But for his blinking eyes, you'd think you're watching a still photo.

Whether it's partisan editing or post-election hindsight, new President Clinton appears most at ease with the endless gladhanding and makeup sessions. Pity Paul Tsongas, though, who has the sharpest one-liners and still winds up uncomfortably entertaining questions in his bathing suit.

The take-it-as-it-comes style may be too slow for those who aren't politics

junkies, but close viewing reveals the absurdity of a process in which the voracious TV camera has overtaken genuine discussion as the source of political information. Hey, maybe it is a horror film!

—Marianne Meyer

Delicatessen

1992. Dominique Pinon, Marie-Larue Dougnac; dirs. Jean-Pierre Jeunet, Marc Caro. Hi-fi surround, subtitled. (R) 100 min. priced for rental. LD \$34.95. Paramount.

If the Brothers Quay made live-action movies, they might look like the French absurdist fantasy *Delicatessen*. Everything in it, and nearly every person is in a state of beautifully stylized decay.

The film is set in a ramshackle apart-



Ham on Wry:
The future leaves a
bad taste in *Delicatessen*.



ment building in a postapocalyptic suburb. City services still work, but food has replaced paper money; the butcher, who's also the landlord, has merchandise only after the latest handyman has finished his chores, at which time everyone has him for dinner. Said butcher, however, may have met his match in his new "employee," a one-time circus clown who wins the heart of his pretty, myopic daughter.

The tenants all live in their own little worlds, and the place is a sick miniature society. Fortunately, the filmmakers checked their allegorical pretensions at

the door. The picture has no significance beyond itself, and its lunatic logic and elaborate slapstick finally win you over. The indescribable climax seems out of control, but it isn't. As black a comedy as there is, *Delicatessen* nonetheless leaves you feeling giddy. —SLS



Secret Honor

1984. Philip Baker Hall; dir. Robert Altman. Digital mono. (NR) 90 min. plus supplement. CLV 2 sides. \$49.98. Criterion.

The "typical" Robert Altman movie features a host of American voices simultaneously battling for attention. In *Secret Honor*, the director's smallest film and one of his best, Altman manages that sort of cacophony with a single character: Richard Nixon.

The premise of the Donald Freed/Arnold M. Stone one-man play is that

one night in the late '70s, Nixon enters his study, turns on a tape recorder and starts justifying himself before an unnamed judge in the impeachment trial that was never held. Under the increasing influence of Chivas Regal, the argument becomes an obscenity-laden, free-association recap of his life and career, at turns maudlin and violently bitter.

Altman's relentless, in-your-face direction and Hall's virtuosic performance make it clear that this is not cheap Nixon-trashing. Nixon's career, by no coincidence, dovetailed almost exactly with the period in which America defined its



mission solely in terms of its response to communism; the spectacle of his tearing himself to pieces is a metaphor for a nation's divisions, in addition to making him a sympathetic victim of his own ambition. *Secret Honor* is really the story of America, and of Americans, from the Depression through Vietnam.

Shot in 16mm, it looks and sounds better here than it did in theaters. The analog tracks feature commentaries by Altman and Freed; there's also a supplement of Nixon speeches (including his resignation and an abridged "Checkers") and campaign ads. The presentation is worthy of the established classic this film deserves to be.

—SLS

Clash of the Titans

1981. Harry Hamlin, Judi Bowker, Burgess Meredith, Laurence Olivier; dir. Desmond Davis. Digital stereo, letterboxed. (PG) 118 min. Side 3 CAV. \$39.95. MGM/UA.

The release of Ray Harryhausen's latest stop-motion effects extravaganza in an improved laserdisc edition is a real milestone. The color, clarity and detail of this version render the original disc

obsolete, and the special-effects sequences, which were criticized as too dark even in the film's original theatrical presentation, now match the rest of the movie much more closely.

The movie's major problem remains its pacing, which is still very clunky thanks to director Desmond Davis—it moves forward like a car with clutch trouble. Harry Hamlin and Judi Bowker do their best as Perseus and Andromeda, the human lovers in this fantasy, and Burgess Meredith gets the best lines as Perseus' mentor. But the visual effects are the real stars. The enormous sea monster Kraken has to be seen on the big screen for the full effect, but Calibos and Pegasus are impressive, and the battle with Medusa is executed well enough to cover up the slight raggedness of her image. The letterboxing frames the picture to best effect, revealing more picture information on the sides.

—Bruce Eder

Thelonious Monk in Paris

1993. B&W. Dirs. Jean Bescont, Jean J. Celerier. Hi-fi mono. (NR) 70 min. \$34.95. Pioneer Artists.

Thelonious Monk in Paris is an essential document for connoisseurs of jazz brilliance. Recorded for French TV in 1959, this delightful disc features the piano genius performing such classics as "Ruby, My Dear" and "Crepuscule With Nellie." Though his combo's formal stage presence, combined with static camera work, may puzzle MTV babies,

it's fascinating to watch Monk amble through his angular melodies, blending sly humor and offbeat strategies. The hour-plus disc also reaffirms the importance of tenor saxman Charles Rouse, whose sensual, flowing solos were the perfect counterpoint to the master's cerebral tendencies.

Too bad the presentation doesn't match the music. The chapters are mislabeled on the sleeve, which also promises color though the program is in unexceptional black and white. And the backstage interview, mostly in French,



needs subtitles, although Monk's uneasy answers in English convey his discomfort loud and clear. In short, an odd way to treat a great man, but worthwhile nonetheless.

—JY

Scarface

1983. Al Pacino, Michelle Pfeiffer; dir. Brian DePalma. Hi-fi surround, letterboxed. (R) 170 min. \$39.95. MCA/Universal.

Even taken at its word— as a cinematic grand opera on the evils of late capitalism—DePalma's *Scarface* is an awfully silly movie. It is, however, very entertaining in its over-the-top way. In recent years, it has also enjoyed quite a cachet among hip-hop luminaries; you can't listen to a rap record these days without stumbling across a bit of dialog—sampled or recited—from the picture.

So MCA's letterboxed disc of the film comes at a welcome time, and a worthy re-presentation it is. DePalma's widescreen compositions are now shown in all their sweeping, excessive glory. The Dolby Surround is a bit tinny and obvious, and Giorgio Morodor's disconcerting score has dated horribly (truth to tell, it didn't sound so great at the time,

From Hamlet to Harryhausen: Laurence Olivier makes an ideal Zeus on the new *Clash of the Titans* disc.





Criminal Mischief: Brian DePalma's hard-boiled *Scarface* still attracts a sizable cult audience.

either). Pacino's eccentric performance is ■ garish red cherry topping a blood-drenched sundae. This disc should stand as the definitive version of ■ guilty pleasure.

—Glenn Kenny

Bonnie Scotland/ Pick a Star

1935/1937. B&W. Stan Laurel, Oliver Hardy, Patsy Kelly; dirs. James W. Horne, Edward Sedgwick. Digital mono. (NR) 187 min. CLV 3 sides. \$39.95. MGM/UA.

As they did in their 105 movies together, Stan and Ollie endure. Their detractors may call them lowbrow, but their supporters are legion — ranging from Marcel Marceau to Alec Guinness to Johnny Carson. They created character traits that became reassuringly familiar: Stan crying at a babyish high pitch during a crisis, Ollie looking into the camera in exasperation when Stan would do or say something particularly dumb.

All these elements are in evi-

dence in this "double feature" package, more a ripoff than a treat since *Pick a Star*, the lesser-known of the two movies, actually features only 10 minutes of material by the team, which the producers added as box-office insurance. No wonder: The story is plodding, with Stan and Ollie the only signs of life. That's a pity, since *Bonnie Scotland*, which includes a charming dance number, amusing dialog and great pratfalls, is one of the boys' more delightful feature-length romps as the two travel to Scotland to claim an inheritance. They get it — but only Laurel & Hardy could then wind up in India, in the army, running from a flock of bees. To paraphrase Ollie, another nice mess you should get into!

—Tom Soter

Chitty Chitty Bang Bang

1967. Dick Van Dyke, Sally Ann Howes, Lionel Jeffries, Robert Helpmann; dir. Ken Hughes. Digital stereo, letterboxed. (G) 147 min. CLV 3 sides. \$39.95. MGM/UA.

MGM/UA has created a glorious laserdisc in *Chitty Chitty Bang Bang*, aglow in entrancing detail, rich color tones and exquisite digital stereo sound. Too

bad the movie isn't better. This fantasy about a eccentric inventor (Dick Van Dyke), his children and a magical car takes more than an hour to take flight, and the movie suffers from a forgettable score. Of the cast, only Robert Helpmann overcomes the static surroundings with a lively, funny and too-brief performance as the child catcher.

—BE

Dick Van Dyke



CLASSICS

Stalker

1979. Alexander Kaidanovsky, Nikolai Grinko; dir. Andrei Tarkovsky. Hi-fi mono, subtitled. (NR) 160 min. \$89.95. Fox Lorber.

In a bleak, vaguely futuristic society, there exists a forbidden realm known only as the Zone. At its center is a room where, it is said, an individual's innermost wishes can be granted. *Stalker's* title character is a holy fool who leads his two charges — professional cynics both — on a strange and harrowing journey to that room. This scenario seems to invite allegorical interpretation, but the uncanny Russian filmmaker Andrei Tarkovsky intended *Stalker* to be experienced, not explained. He demands from his viewers the same leap of faith that the *Stalker* asks of his clients.

That leap is impossible to make for this video version, as dire a misrepresentation of a classic as I've ever seen. *Stalker* is the sum of its painstakingly created and beautifully shot images, but here they are rendered impenetrably murky by a poor video transfer of a substandard print. From the debris that litters the tunnels and floats in the flooded passageways of the Zone to the tender childlike blue of the *Stalker's* eyes, all is lost. The shifts from sepia tone to steely gray are gone; the change from black and white to color is all but imperceptible. Fox Lorber's done a fair to good job with other Tarkovsky films, but it's dropped the ball disastrously here. To see *Stalker* in this incarnation is actually worse than not seeing it at all.

—GK



One for Two: Laurel and Hardy shine in *Bonnie Scotland* (right), but *Pick a Star* falls short.

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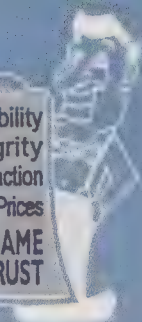
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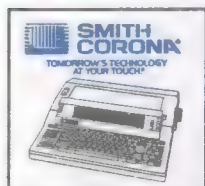
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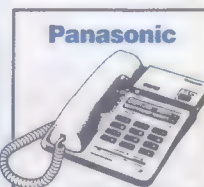


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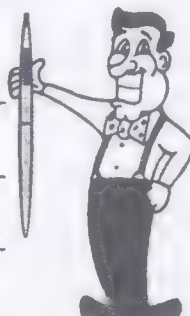
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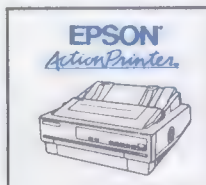
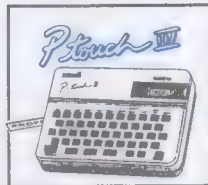
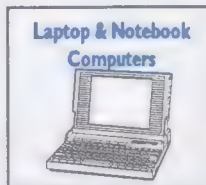
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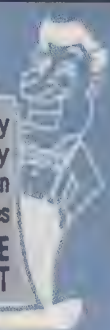
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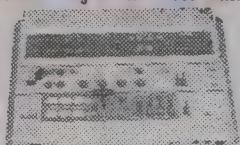
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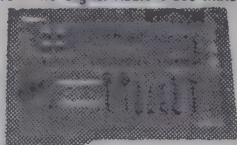
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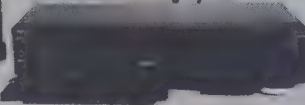


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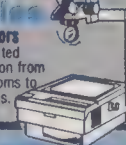
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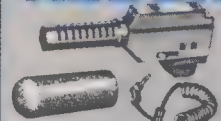
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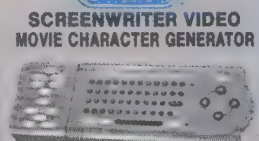
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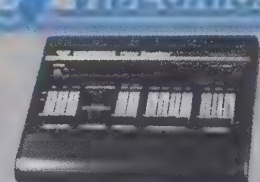
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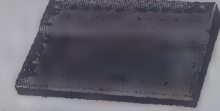
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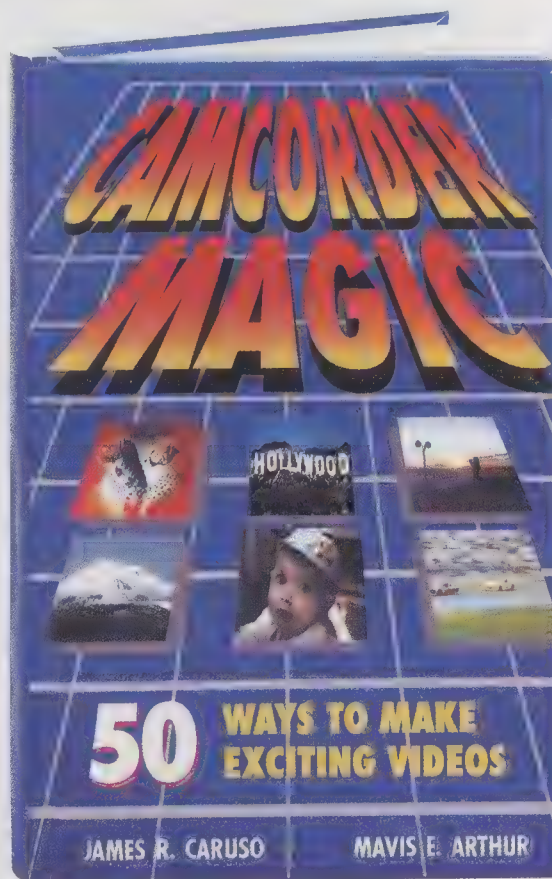
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Magazine contributors James Caruso and Mavis Arthur, *Camcorder Magic* will change the way you shoot videos. Over 190 fact-packed pages and *hundreds* of color photos show you:

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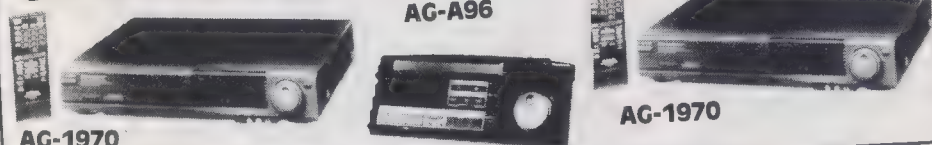
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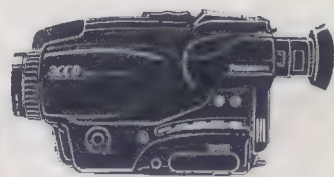
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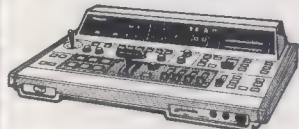
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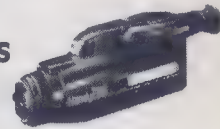
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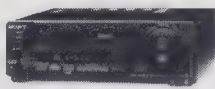


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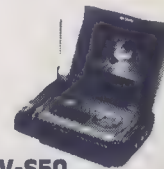


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HIGHLIGHTS OF THE MONTH

Astro Boy

1964. B&W. Four episodes from the popular anime series. Mono, dubbed. 120 min. CLV 2 sides. LD \$29.99. U.S. Manga Corps.

Basic Instinct: The Original Director's Cut

1992. Michael Douglas, Sharon Stone; dir. Paul Verhoeven. Turns up the heat even more, and adds interviews (plus even more extras on laserdisc). Surround, cc. (NR) 150 min. VHS \$49.98. LD (letterboxed) \$69.95. Carolco/Pioneer Special Editions.

Buying a Personal Computer

1992. For technophobes: how to choose the system that's right for you. Also available: *Upgrading and Repairing Your Computer*. Mono. 50 min. VHS only, \$24.95. PC Health Center (508-988-9095).

The Distinguished Gentleman

1992. Eddie Murphy, Sheryl Lee Ralph; dir. Jonathan Lynn. One in a long line of Eddie's comeback films. Surround, cc. (R) 112 min. VHS, Beta \$94.95. LD (letterboxed) \$39.99. Hollywood Pictures.



The Final Frontier: Super-robot Astro Boy stars in his first-ever laserdisc collection.

Gable and Crawford

1993 comp. B&W. Six films—of varying quality—from that popular '30s duo: *Possessed*, *Forsaking All Others*, *Chained*, *Love on the Run*, *Strange Cargo* and *Dance*, *Fools*.

Dance. Mono. (NR) 513 min. CLV 10 sides. LD \$99.98. MGM/UA.

Gardens of the World With Audrey Hepburn

1993. 6 vols. A perennial beauty, the late Audrey Hepburn, visits more than 50 gardens around the world. Stereo. (NR) 30 min each. VHS only, \$24.95 each. Perennial Productions (800-846-3211).

The Golden Coach

1952. Anna Magnani, Odoardo Spadaro; dir. Jean Renoir. Renoir's showcase for Magnani: Actress from the *commedia dell'arte*, touring South America in the 18th century, finds herself the object of many affections and the recipient of an extravagant gift. Mono. 102 min. CLV 2 sides. LD \$49.95. Criterion.

A Hard Road to Glory

1988. B&W/color. The late Arthur Ashe hosts this Emmy winner, ■ look at black athletes—including Jackie Robinson, Althea Gibson, Joe Louis and more—over the years. Narrated by James Earl Jones. Mono. 60 min. VHS only, \$19.95. Wood Knapp (800-331-6839).

The John Waters Archives

1977/1981/1988. Divine, Mink Stole, Edith Massey, Tab Hunter, Ricki Lake; dir. John Waters. Compendium of trash from the pride (or shame, depending on whom you talk to) of Baltimore: *Desperate Living*, *Polyester* and *Hairspray*. Mono/mono/stereo. (NR/R/PG) 265 min. VHS \$54.85 set (or \$19.95 each older title, \$14.95 *Hairspray*). LD price n.a. New Line.

Lethal Lollita—Amy Fisher: My Story

1993. Noelle Parker, Ed Marinaro; dir. Bradford May. And you thought it was "ovuh": This TV-movie boasts "additional intimate footage" on video. (Also just re-

Compiled by April P. Bernard

Labels For Less

Sissy Spacek
in *Carrie*

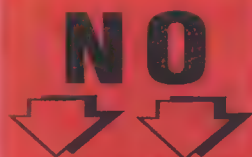


MGM/UA has outdone itself: For every good oldie it dusts off for \$19.98—King Vidor's *Hallelujah*, Edward G. Robinson in *The Sea Wolf*, Frank Borzage's *Three Comrades* and Wallace Beery in *Viva Villa!*—there's a \$14.95 turkey—like Debra Winger's film debut in *Slumber Party '57* or Burt Reynolds' *Fuzz*—to match. Also: \$19.98 intrigue with Charlie Chan, Shaft and Sherlock Holmes.

Columbia TriStar is concentrating on Mother's Day and family favorites—by repricing *The Prince of Tides* to \$19.95, two Gidget flicks to \$14.95, and volumes of Saturday morning's *H.R. Pufnstuf*, *Land of the Lost* and *Sigmund and the Sea Monsters* to \$9.95. Over at FoxVideo, recent theatrical releases *Grand Canyon*, *White Men Can't Jump* and *The Commitments* are now \$19.98 each.

Superb Criterion Collection laserdiscs are within reach in new CLV editions, including *Tootsie* for \$39.95, *Carrie*, *Grand Illusion* and *The Rules of the Game* for \$49.95, and *The Last Picture Show* for \$59.95....If you missed the under-\$10 boat at McDonald's, Orion is offering *Dances With Wolves* for \$14.98....Leading ladies reign at LIVE, where *Rambling Rose* (Laura Dern) and *Backtrack* (Jodie Foster) are available for \$19.98 each....MCA/Universal's latest \$14.98 titles include *Lives of a Bengal Lancer*, *The General Died at Dawn*, *The Munsters' Revenge*, *Jetsons: The Movie* and *The Chalk Garden*....A*Vision is cutting prices on its catalog of Jane Fonda workout tapes....Top western *The Shadow Riders* is now \$14.95 (\$9.99 EP) from Starmaker.

—APB

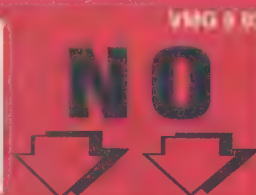


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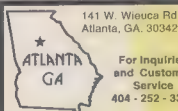
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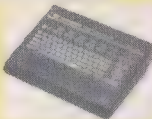
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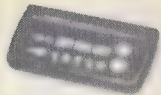


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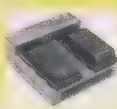


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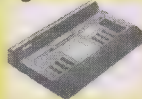
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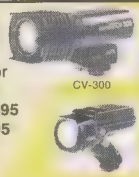
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Paul Simon: Born at the Right Time 1992. Retrospective of the enduring singer, from "Bridge Over Troubled Water" to "You Can Call Me Al." Stereo. 110 min. VHS \$29.98. LD \$34.98. Warner Reprise.

Sarafina!

1992. Whoopi Goldberg, Miriam Makeba; dir. Darrell James Roodt. Musical on apartheid in South Africa. Surround, cc. (PG-13) 99 min. VHS, Beta \$94.95. LD \$39.99. Touchstone.

War and Peace

1968. Ludmila Savelyeva, Vyacheslav Tihonov; dir. Sergei Bondarchuk. Mind-boggling Best Foreign Film — with its 273 sets, 100,000 soldiers and 2,000 different costumes — previously only available dubbed, now subtitled in a recently discovered Russian-language print. Mono. (NR) 403 min. VHS only, \$99.95. Kultur (908-229-2343).

The World of Henry Orient

1964. Peter Sellers, Paula Prentiss, Angela Lansbury; dir. George Roy Hill. Quirky comedy: Giggly adolescents dog the foot-

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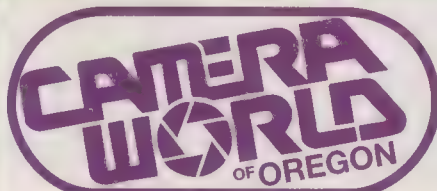
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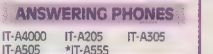
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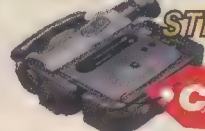
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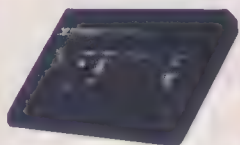
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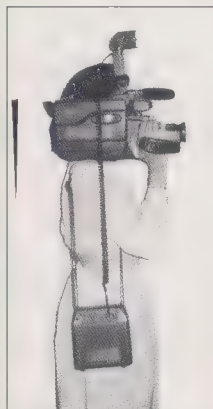
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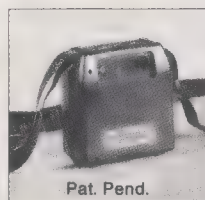
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SENSORS

continued from page 53

But until such standardization occurs, ignore camcorder sensitivity specs and test their low-light performance yourself. This is relatively easy to do (see "Testing CCDs Yourself").

Strenuous efforts are being made to maintain sensitivity as chip size—and thus light-sensitive area—decreases. The most popular technique is the application of "microlenses" to the surface of the CCD. The lenses direct light that would have fallen on non-light-sensitive areas of the CCD onto the photodiode areas instead.

Noise. While CCDs can be made extraordinarily sensitive—enough so that they are now the preferred method of imaging in astronomy—they, like any electronic circuit, can also be noisy. Due to temperature effects and slight defects in the materials, CCDs spontaneously generate charges even in total darkness. This "dark current," besides generating random noise, or "snow," in low-light images, can vary in average level from pixel to pixel, creating what is called fixed-pattern noise. This creates the effect of watching the image through a dirty screen. Fixed-pattern noise, because it is fixed and not random, tends to stand out visually.

Dark current noise is quite temperature-dependent, even over the range of normal human activity. It doubles with every seven-degree Celsius increase. You might even see a difference between dim scenes shot with the camera at freezing and at room temperatures.

Smearing and blooming. Even some experts seem to be confused about these two phenomena. Both generate what looks like a vertical smear in the image, and both occur with very bright highlights in the picture, but for different reasons. Smearing happens when light from overloaded pixels leaks into the vertical shift registers. As the moving charge packets pass a "bright" pixel, some of the leaking light generates additional electrons in the packets. The ultimate result is a slight vertical smearing.

Blooming, on the other hand, comes from severely overloaded pixels that flood a CCD's vertical shift registers with charge, creating a vertical white line running through such bright objects as oncoming headlights.

Within a decade, the low-resolution images we now accept as the norm will be fading into history. But the CCD—in a high-performance, high-resolution form—should be with us for decades to come.

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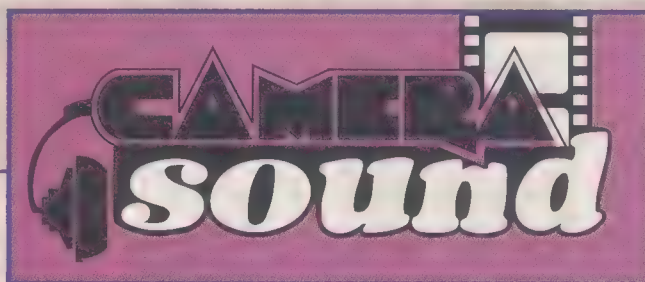
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3 WIDES

continued from page 45

to include its own version of Panorama mode in its forthcoming widescreen set. "We can do it," said a Philips engineer, "it's a matter of random-access memory allocation."

As it is, Philips' direct-view set, due in stores around June, has unique characteristics of its own to showcase. Priced at \$5,995, the 34P560 can double as a VGA computer monitor. Its 34-inch picture tube can display 960 pixels horizontally, far more than the 640-pixel ceiling for VGA graphics. Based on an informal viewing at January's Consumer Electronics Show, the set displays graphics and text with impressive clarity and is well able to handle the challenge presented by computer applications. Still, anyone who buys a widescreen TV to use as a word processing terminal probably needs to take a long break with a stack of *Bullwinkle* tapes.

Potential buyers will be more intrigued by the set's ability to accept an HDTV decoder than a VGA interface. The signal would enter through the wideband RGB input on the back. However, no television manufacturer will commit to building add-on decoders until an HDTV transmission standard is selected for the United States. And even if Philips eventually makes an add-on decoder, it will almost certainly cost as much as a good conventional TV set. No one's talking hard numbers, but \$500 is a good guess.

While a decoder won't turn the 34P560 into a true HDTV receiver, it should come close to letting it display HDTV picture quality. Depending on the transmission system chosen, HDTV pictures in the U.S. should have about 1,400 pixels across the screen, about 40 percent more than the display level for the 34P560. But this may be as close as most first-generation HDTV receivers come to matching the transmission standard, considering the cost of higher-resolution picture tubes.

Like JVC, Panasonic has also chosen rear projection for its first widescreen TV. And like Thomson, Panasonic decided to give viewers lots of options. The PT-50WFX5, which should just be showing up in stores, is a 50-inch model that sports two tuners built to handle a variety of picture-in-picture and picture-out-of-picture features. It's designed to let you navigate through four viewing modes and display lots of small pictures—more than any other widescreen set. In PIP mode, for example, the set can display either a second channel or a

continued on page 94

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CASSETTE DECKS

CT-W301 129.00 CT-S601R 314.95
CT-W451R 149.00 CT-M50R 229.00
CT-W501R 159.00 CT-WM60R 269.00
CT-W601R 199.00 CT-WM70R 309.00
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LASER DISC PLAYERS

CLD-S201 324.95 CLD-D701 734.95
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RECEIVERS

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RX-307TN 169.00 RX-807VTN 179.00
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CD PLAYERS

KLX-151TN 109.00 KLX-451TN 149.00
KLX-251TN 129.00 KLX-S12N 289.00

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XLM-307TN 179.00 XLM-507TN 209.00
XLM-407TN 195.00 XLF-207TN 189.00

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TDR-441TN 155.00 TDW-707TN 199.00
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DEH-680 294.95 KEH-8200R 309.00
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KEH-M8200 319.00 KE-7878 184.95
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KEH-M6200 225.00 KEH-4949 139.95

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	DAK	MAXELL
D-60	95 MX-60	1.99
D-90	1.05 MX-90	2.25
D-120	1.15 UDI-60	1.59
HXS-60	1.25 UDI-90	1.89
MA-60	1.75 UR-60	.89
MA-90	2.19 UR-90	.95
SA-60	1.65 UR-120	1.59
SA-100	2.10 XL-160	1.85
SA-90	1.85 XL-190	1.89
SAX-60	1.95 XL-165	1.89
SAX-90	2.45 XL-195	2.10
SAX-100	1.99 XL-195	2.60

FUJI

DR-I 60 95 FR-IX Pro 90 2.29
DR-I 90 1.10 FR-IX Pro 100 2.55
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Panasonic SVHS CAMCORDER



AG-455

S-VHS Camcorder/Source VCR for Editing, 12x, 2 Speed Zoom lens, 24x & 100x Digital Zoom, Digital Special Effects, Wipe, Fade, Mix, Strobe, etc. Special Effects

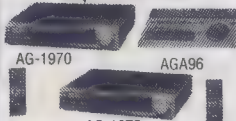
Panasonic CAMCORDER



AG-195

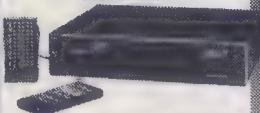
VHS Camcorder with Digital Special Effects, 8x Zoom lens with 2 speeds, Digital 12x or 100x zooms, Digital Special Effects like wipe, fade, strobe and mix.

Panasonic EDIT SYSTEM



S-VHS/VHS editing, insert and assemble edit, Hi-Fi Stereo sound. Jog shuttle search, and Multiple program-mable edits

Panasonic AG-EP60



COLOR VIDEO PRINTER
Capable of making prints from VCR's, Camcorders, Cameras, TVs and Computers. Split print features can produce passport photos.

Panasonic DS-2550(WV-F250HB/ AG-7450/WV-S290)



3 fit CCD camera package, 700 lines res. for excellent picture quality, SVHS docking recorder with amorphous heads for improved picture quality & long life, complete w/ Fujinon 12x lens, shotgun mic & carrying case.

Panasonic WJ-MX50



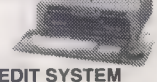
Digital special effects switcher with 4 Y/Cand/or composite inputs, 287 digital effects, 4 channel audio mixer w/ balanced XLR/line level audio inputs, audio-follow-video, chroma & luminance keyer, 2 channel color corrector, multi color matte generator, more.

VIDEO/DATA PROJECTORS



Several different brands of video and data projectors available. Please tell us your application and we will recommend one suitable for your needs.

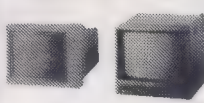
SONY EVO-9700



HI-8 EDIT SYSTEM

Single unit with built-in play and record VCR's, Assemble & Insert editing, S-Video In and Out connectors. Jog shuttle, dial search at 19x the normal speed. Call for detail brochure - Monitor Optional.

SONY



VIDEO MONITOR

We carry different size 8" to 32" video monitors with 400-900 lines of resolution. One of the models we stock: PVM-8041, PVM-5340, PVM-1390, PVM-2220, PVM-1341, PVM-1342, PVM-1620, PVM-1942, PVM-2030

SONY EVW-300



3 CCD/Hi-8 CAMCORDER

One piece camcorder, very portable, High Density 1/2" IT CCD's AFM HiFi recording, 1.5" Viewfinder, Hi8 Time Code, Auto trace white balance. Please call for a detail brochure.

SONY U-MATIC VTR's



U-Matic & U-Matic SP video players and recorders in stock for immediate delivery. Some of the model numbers we stock VP-7020, VO-7600, VP-9000, VO-7600, VO-9600 and VP-7040.

SONY



MICROPHONES

ECM-44, ECM-55, ECM-77, ECM-672 and other mics available for immediate delivery.

SAMSON



WIRELESS MICS

MR1 Compact receiver with dbx noise reduction. Removable flexible antenna. uses 9V battery. There are several different Lavalier and Hand held microphone options available suited for different types of application. Microphones used are Shure or Sony. Please call for recommendations.

BATTERY BELTS

Battery belts available in 12Volts or 24Volts with 6, 12, 20 or 30 AH power. Both cigarette lighter or 4 pin XLR output available. Please specify when ordering

antobauer

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Industry standard BRICK batteries in different series (Pro-pack, Logic or Digital Pro-pack) available

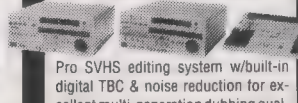
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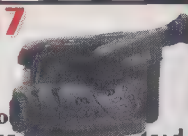
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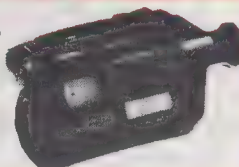
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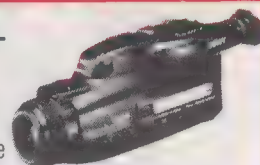


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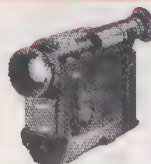


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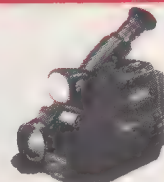
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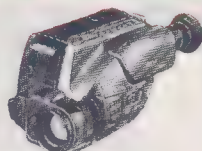
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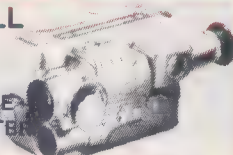


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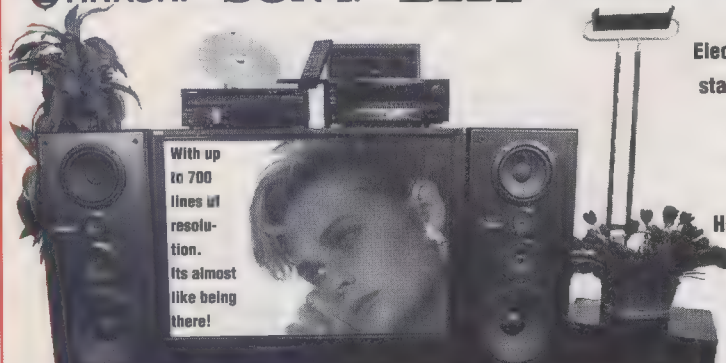
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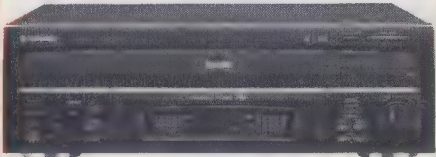
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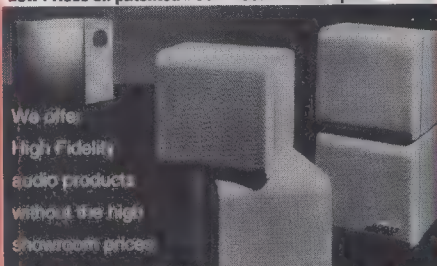


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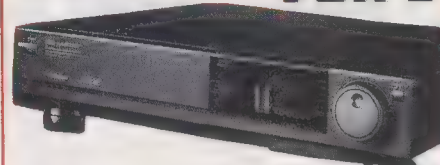
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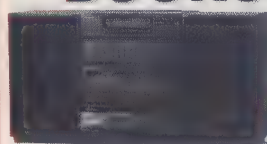


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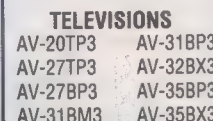
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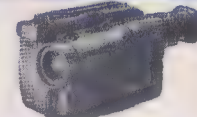
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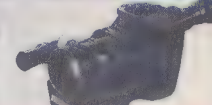
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2. Do you plan to purchase one within the coming year? Yes ☐ C No ☐ D
3. How many titles do you/would you purchase per year on laserdisc?
1-5 ☐ E 6-25 ☐ F More than 25 ☐ G
4. Where do you currently purchase laserdiscs?
Chain Store ☐ H Specialty Store ☐ I Mail Order ☐ J
5. Do you currently rent laserdiscs?
Yes ☐ K No ☐ L Rental not available ☐ M
6. How familiar are you with the availability of new and upcoming laserdisc product?
Can't seem to find information about laserdiscs ☐ N
Somewhat aware of new releases and availability ☐ O
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46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135
136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165
166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
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Name _____
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1. Do you currently own a laserdisc player? Yes ☐ A No ☐ B
2. Do you plan to purchase one within the coming year? Yes ☐ C No ☐ D
3. How many titles do you/would you purchase per year on laserdisc?
1-5 ☐ E 6-25 ☐ F More than 25 ☐ G
4. Where do you currently purchase laserdiscs?
Chain Store ☐ H Specialty Store ☐ I Mail Order ☐ J
5. Do you currently rent laserdiscs?
Yes ☐ K No ☐ L Rental not available ☐ M
6. How familiar are you with the availability of new and upcoming laserdisc product?
Can't seem to find information about laserdiscs ☐ N
Somewhat aware of new releases and availability ☐ O
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7. Would you be interested in receiving monthly new release information?
Yes ☐ R No ☐ S
8. Are you currently a subscriber to VIDEO? Yes ☐ T No ☐ U

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31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135
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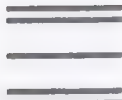
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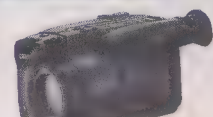
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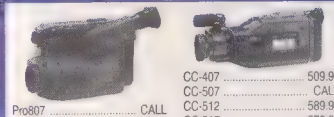
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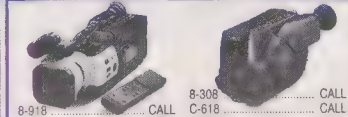
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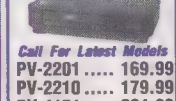
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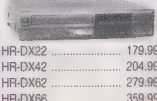


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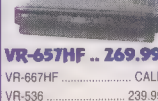


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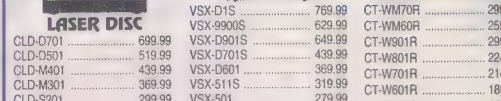
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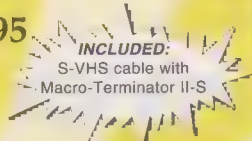
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continued from page 76
three-picture channel scan.

Intended to serve as a home theater component, the PT-50WFX5 includes a 15-watt powered subwoofer and a two-channel, 15-watt Panasonic Active Dome Sound System, as well as Dolby Pro-Logic. Like JVC's set, the PT-50WFX5 lacks line doubling, a glaring omission given the need for high-quality pictures. However, it compensates somewhat by using a modified form of digital line interpolation in its two expansion modes for letterboxed programs. A fourth scanning line is added to every three scan lines viewers would see if the original image filled the screen vertically from the start.

SPECIAL REPORT

continued from page 40

TRX-1820 and the 2220 for \$1,995 and \$2,295, respectively, add S-VHS inputs and a "modem-on-module" for ordering pay-per-view events without picking up a phone — just use the remote. Both also offer UHF remotes, color onscreen display menus and favorite-channel programming.

The lesson from overseas is that small dishes may not automatically displace big dishes. In Britain, the BSkyB DBS system has taken the country by storm. Mini-dishes sprouting from London flats are as common as umbrellas on London streets. Yet out in the suburbs C/Ku-band satellite TV is enjoying unprecedented popularity. "Our business in England has never been better," said Howard Koch, national sales manager for Chaparral Communications, a major maker of satellite receivers.

The reason big-dish owners can tune into so much programming (and why Fuchs is no longer playing Carrie Nation) is that the satellite industry finally licked the signal theft problem. Last fall, a new scrambling system from General Instrument, called VideoCipher II Plus Renewable Security (VCRS), was put into place. It cut channel poaching from about 30 percent to virtually zero.

But to prove there is some justice in the world, and emphasize one of satellite TV's continuing advantages, big-dish experts point out that satellite subscribers get their pay TV at significantly lower rates than most cable subscribers. Less than \$30 a month buys a dish owner the full complement of network and basic channels, plus either HBO/Cinemax or Showtime/TMC. For about \$40 a month, a dish owner can get every basic, premium and what-have-you service in the sky. And that's a deal that will stay hard to beat.

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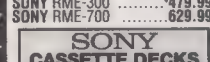


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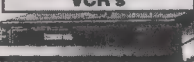
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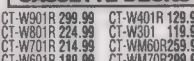
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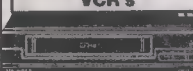
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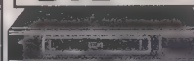
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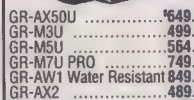
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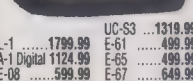
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WIDESCREEN

continued from page 45

messed with the image," he says.

Thomson's Broadwin says the company included cinema B and C modes as a courtesy to letterbox-haters, and that it recommends use of the cinema A mode for most widescreen material. Apparently, most widescreen sets in other countries offer only a 1.85:1 mode. Indeed, it may be impossible to create a 2.35:1 mode without picture degradation. As Eder put it, "In a way, this set is too good for NTSC—it's like putting the format under a magnifying glass."

Unfortunately, widescreen TV doesn't appear to be well-suited for use with VHS VCRs. We tried a VHS letterboxed tape of *Last of the Mohicans*, and found details smeared and colors runny. We feel most widescreen buyers will want to stick with the 4:3 mode, which produces black bars at the side of the screen, when they rent tapes.

The PS34190 is innovative not only in its screen, but in its feature package, which is the most extensive we've seen in a TV set. The menu system (which, like a computer monitor, is sharp and wonderfully free of flicker) just goes on and on—menus lead to submenus, which then lead to sub-submenus, each packed with useful options. The most innovative features are picture-outside-picture (POP) and split-screen. These are activated by blue buttons on the remote, grouped with the cinema button.

Everyone found POP appealing. It moves the main picture to the left side and inserts three, four, five or six inset pictures on the right side. The insets—not motion video, just still-frames updated every couple of seconds—can be of any TV channels you select.

There's also picture-in-picture (PIP) in four sizes, which we hardly used because we were so enthralled with POP. You can assign the audio from each picture to either the headphone jack or the main speakers, so one person can watch one program while listening through the speakers, and another person can watch the other program while listening through headphones.

The split-screen mode splits the screen down the middle to show two pictures. Like the PIP, the audio signals of each picture can be monitored separately if one viewer uses headphones. Because there are two tuners, you can watch two channels at once with split-screen or PIP without hooking up a VCR. Last, there's a channel guide feature that shows still-frames of nine channels at once.

The audio system incorporates a

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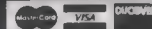
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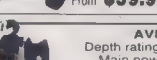
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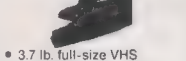
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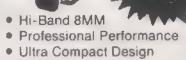
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The set's audio menu accesses an onscreen seven-band graphic equalizer and several surround modes, including Pro-Logic, Dolby 3 (Pro-Logic without rear speakers), expanded stereo, matrix, hall and stadium. There's even an adjustable volume limiter, which prevents abrupt changes in audio level. No question about it, this is the best audio system we've seen in a direct-view TV.

The video menu is almost as extensive. It includes adjustments for color temperature (warm, medium and cool), noise reduction (low, medium and high) and theater mode, which reduces color temperature and brightness.

The set has two S-video/video/stereo audio inputs and two antenna inputs, with a loop-through output designed for use with a cable box. These inputs are a bit difficult to access, though, because the input select button on the remote calls up a menu, which then requires a button push to select the input, and another push to get rid of the menu.

Thomson says the PS34190 is "HDTV-ready," and backs up its claims with RCA-type jacks for red, green, blue and sync. These conform to the current SMPTE standard for HDTV cabling. Thomson included the input for use with future HDTV tuners, which should be available sometime after the FCC settles on a standard. We didn't have the opportunity to feed an HDTV signal

into the set, but we did try it with a Runco line doubler. The image looked a little better than it did using the line doubler built into the set.

However, Thomson admits the PS34190 will never deliver true HDTV. Although it performs the 31.5-kilohertz scan rate required for HDTV, the dot pitch of the set is much larger than the approximately 0.3 dot pitch that would be required for a full HDTV image. In the sense that it's in the same aspect ratio as HDTV, the PS34190 is more HDTV-ready than conventional TVs. But as Beacham points out, "Any TV set is HDTV-ready, because there will be HDTV-to-NTSC adapters."

Most of the panelists complained about the menu system. I found it easy to use but at times cumbersome—it often takes several button punches to accomplish a specific task. After consulting with Thomson (we didn't have an owner's manual), we found out that the adjust button on the remote cycles you through certain operations, like cinema mode selection, without engaging the menu system.

WIDESCREEN HOME VIDEOS

Although this is the first widescreen TV set, 16:9 camcorders have been available for more than a year. Roth shot 16:9 footage with two of them, JVC's S-VHS-C GR-SZ1 and Hitachi's Hi8 VM-H39A, and played the videos on the 16:9 set. The JVC uses letterboxing to achieve a 16:9 ratio, while the Hitachi squeezes the picture, as on the sports laserdisc we tried.

Theoretically, the Hitachi should produce a better picture. But Roth was

surprised to find that the JVC images looked better—apparently the Hitachi's digital circuitry degrades the image. The JVC's letterboxed picture also looks fine on a 4:3 set, but the Hitachi's 16:9 mode distorts the picture when its tapes are played on a 4:3 set.

Either way, Roth is enthusiastic about 16:9 home video. "It's a fantastic look," he says. "If I had this TV, I'd definitely be shopping for a 16:9 camcorder. The good news is that anyone with a high-resolution [S-VHS or Hi8] camcorder can shoot good widescreen video right now—just leave space at the top and bottom of the picture."

How viable is a 16:9 TV in the unforgiving environment of the showroom—especially at a list price of \$5,000? Very viable, says Warren Mann. "Widescreen is a tangible benefit," he says. "It's different from everything else on the floor. I sell lots of \$5,000 sets right now—Mitsubishi 40-inchers—and this will be easier to sell. I wouldn't want to be the retailer who doesn't have this."

Of course, the success of widescreen TV will be assured as 16:9 HDTV pushes out 4:3 NTSC. But will 16:9 NTSC be just an interim technology? Or will it play a major role in the growth of advanced television in the U.S.?

We're sure the PS34190 will have outspoken supporters and detractors—in fact, it already does—and we can't venture a guess as to whether or not widescreen TV will appeal to you. We can, however, strongly recommend you seek out one of these sets and put it through its paces. At the very least, you'll get your first taste of the television revolution that's soon to come. ■

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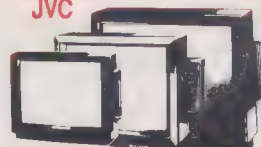
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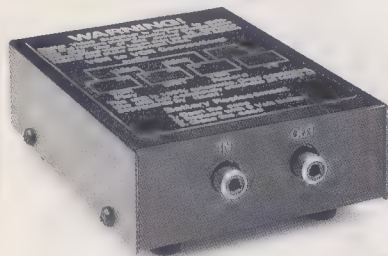
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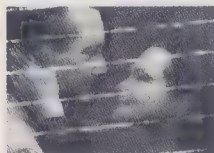
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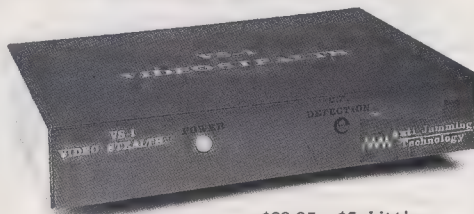
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BY FRANK BEACHAM

OFF THE AIR

Who'll pay for 500-channel TV? Guess.

It's Friday evening and Joe Video visits his local rental store to pick up a movie for the weekend. Browsing a while, Joe finds three films he wants to take home instead of the one he came for. He pays the store in cash. The next day, Joe takes his two children to a mall where they play videogames in the arcade for an hour while he and his wife shop and run errands.

Later they all head for a movie at the multiplex. Joe pays cash for the tickets, then a little more for popcorn and sodas. On Sunday, Joe realizes he hasn't watched all the movies he rented. Oh well, he thinks, I'll keep them out an extra day.

If you were to ask Joe how much he spent for entertainment over the weekend, chances are he'd have only a vague idea, and the figure would be low. Most of his purchases were in cash, trickled out in small amounts, which is how many families spend their entertainment dollars.

The prospect of seriously tinkering with this pattern is worrying the architects of the coming digital video revolution. They're afraid a new kind of video sticker shock may pull the rug from under their high-technology visions. If all goes as planned, hundreds of new video programs will be ready to pour into your home in the next couple of years. Direct-broadcast satellites bearing dozens of channels and video services dialed

over telephone lines will challenge cable systems. Meanwhile, cable systems will vigorously expand to offer more than 500 channels.

For the first time, viewers at home will be able to rent movies "on demand," and order takeout food and play two-way videogames over the living room TV. New services will let you use the cable TV system to make wireless phone calls, attend televised classes and access online databases.

The catch, of course, is that each service will come with a price tag. And the cumulative charges will arrive together in a single monthly bill, rather than fade into the budgetary ozone as small out-of-pocket expenditures. For the first time, many consumers will focus on the total amount they spend each month for video-oriented entertainment.

It's easy to see how costs might add up. Let's start with a monthly cable rate of \$20 for basic channels, then add \$12 for a premium channel. Familiar ground, so far. But

now, let's assume our family forsakes the local video store to "rent" movies-on-demand from its cable system, ordering 10 the first month at a cost of \$3.95 each. The kids, meanwhile, fall in love with the new game channel that lets them play in-

teractively through the cable system with friends on the other side of town. At 50 cents a game, they're hard pressed to stop after 25 rounds.

The new "virtual VCR" feature is even better. For 50 cents a show, Joe can replay through the TV any prime-time TV program at any time during the

week following the first broadcast—watch *60 Minutes* on Monday night, and *Murphy Brown* on Sunday. A month's cost for this convenience? Let's say \$6.

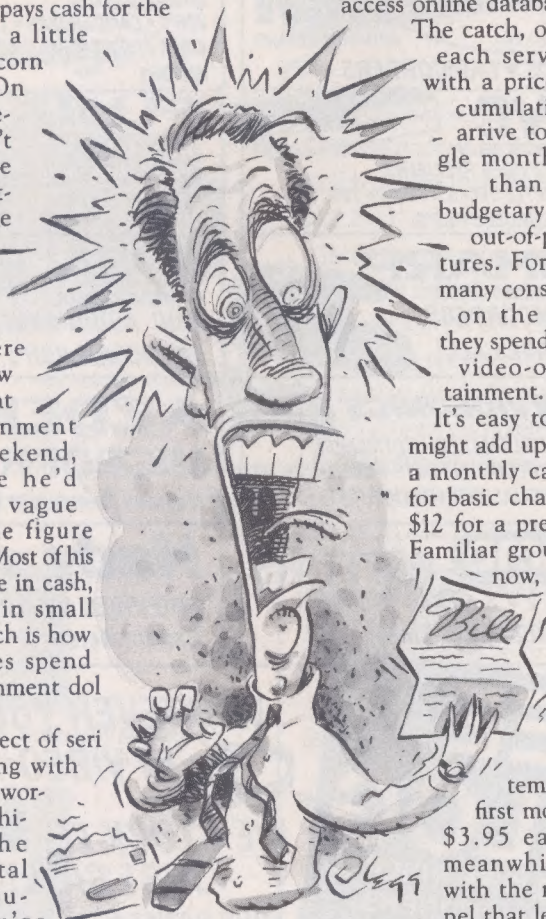
As an opera buff, Joe's wife finds the monthly prorated charge of \$6.50 for a video subscription to the Metropolitan Opera pretty reasonable. So too the monthly \$10 fee for Digital Cable Radio, with its huge variety of CD-quality music formats. Heck, it's less than the cost of a single CD each month. One Saturday, seduced by the ability to watch all 25 college football games on the same afternoon, Joe decides to splurge. He knows it's silly to pay for five games at \$5 each, but the remote makes it so easy to navigate from game to game.

Our exercise in pay-as-you-play channel surfing would cost us a whopping \$131.50. A cable bill this high would sound all sorts of alarms in many homes and lead, at the least, to household limits on entertainment expenses—instant video austerity. According to John Humphreys, a telecommunications consultant based in Washington, D.C., the limit for most households will be about \$30, about what cable already costs.

Does this mean tomorrow's programmers are creating a system of services most families will find too costly to enjoy, in part because they'll be hit with all their expenses in a single monthly bill? Is this digital video's Achilles' heel?

One way video programmers may deal with the brick-wall effect of a big bill is by devising a new way of charging for video services—by the minute instead of by the program. Most consumers want to pay only for the services they use, says Humphreys, not for a large bundle of channels, many of which they never watch. If this proves true, the dramatic increase in program choices will pressure video distributors to sell video programs to consumers on a metered basis, like curbside parking time.

Video by the minute is an approach the phone companies may find especially attractive, since they already know how to do it and they're racing ahead with video projects. For the rest of us, this may be just one more shock we'll be asked to accept.



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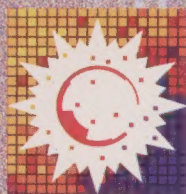
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